

**UNIVERSITY OF PUNE**  
**COURSE STRUCTURE FOR**  
**BACHELOR OF BUSINESS ADMINISTRATION (B.B.A.)**  
**(From 2013-14)**

**1. Title:**

The degree shall be titled as Bachelor of Business Administration (B.B.A.) under the Faculty of Commerce Part I w.e.f. the academic year 2013-2014 B.B.A. Part II w.e.f. 2014-2015 and B.B.A. Part III w.e.f. 2015-2016.

**2. Objectives:**

- (i) To provide adequate basic understanding about Management Education among the students.
- (ii) To prepare students to exploit opportunities being newly created in the Management Profession.
- (iii) To train the students in communication skills effectively.
- (iv) To develop appropriate skills in the students so as to make them competent and provide themselves self-employment.
- (v) To inculcate Entrepreneurial skills.

**3. Duration:**

The Course shall be a full time course and the duration of the course shall be of three years.

**4. Eligibility:**

- (i) A candidate for being eligible for admission to the Degree course in Bachelor of Business Administration shall have passed 12th Std. Examination (H.S.C. 10+2) from any stream with English as passing subject and has secured 40% marks at 12th Std.
- (ii) Two years Diploma in Pharmacy after H.S.C., Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- (iii) Three Year Diploma Course (after S.S.C., i.e. 10th Standard) of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- (iv) MCVC

(v) Every eligible candidate has to pass a Common Entrance Test to be conducted by the respective Institute/College.

**5. Medium of Instruction:**

Medium of instruction shall be in English only.

**6. Scheme of Examination:**

The B.B.A. Examination will be 3600 marks divided into 3 parts as per details given below:

(i) B.B.A. Part I (Sem I, II) Aggregate marks	1200
(ii) B.B.A. Part II (Sem III, IV) Aggregate marks	1200
(iii) B.B.A. Part III (Sem V, VI) Aggregate marks	1200

There will be written Examination of 80 marks and 3 hrs duration for every course at the end of each Semester. The class work will carry 20 marks in each course. For Courses in Business Exposure (Sem IV) there will be viva voce examination of 50 marks and for Written Report on Industrial visits 50 marks. For course on Project work (Sem VI) there will be oral presentation test consisting of 20 marks and Written Report of 30 marks.

**7. Backlog:**

- a) A student shall be allowed to keep term for the Second Year, if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subjects of the First Year examination, which consist of First & Second Semester.
- b) A student shall be allowed to keep for the Third Year, if he/she has no backlog of First Year & if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subjects of the Second Year examination, which consist of Third & Fourth Semester.

**8. Verification and Revaluation**

The candidate may apply for verification and revaluation or result through Principal of the College which will be done by the University as per ordinance framed in that behalf.

**9. Equivalence and Transitory Provision**

The University will conduct examination of old course for next three academic years from the date of implementation of new course.

The candidate of old course will be given three chances to clear his subjects as per the old course and thereafter he will have to appear for the subjects under new course as per the equivalence given to old course.

#### **10. Standard of Passing and Award of Class:**

In order to pass examination a candidate has to obtain 40% marks out of 100 (Sem-end exam 80 + class work marks 20 taken together) in each course.

#### **The award of class:**

The class shall be awarded to the student on the basis of aggregate marks obtained by him in all three years (Part I, II and III). The award of Class is as follows:

(i) Aggregate 70% and above	First Class with Distinction.
(ii) Aggregate 60% and above but less than 70%	First Class.
(iii) Aggregate 55% and above but less than 60%	Higher Second Class
(iv) Aggregate 50% and above but less than 55%.	Second Class.
(v) Aggregate 40% and above but less than 50%	Pass Class.
(vi) Below 40%	Fail.

#### **11. Setting of Question Papers**

1. A candidate shall have to answer the questions in all the subjects in English only.
2. The question papers shall be framed so as to ensure that no part of the syllabus is left out of study by a student.
3. The question paper shall be balanced in respect of various topics outlined in the syllabus.
4. The question papers shall have a combination of long and short answer type questions.
5. There shall be no overall option in the question paper; instead, there shall be internal options.

**12.** The subject wise Revised Syllabus for F.Y. BBA Course shall be as given in the following pages.

## Subject wise Course Structure

### B.B.A. First Year (F.Y.) (2013-14)

Sr. No.	Sub. Code	Sem I	Sr. No.	Sub Code	Sem II
1	101	Business Organization and System	1	201	Principles of Management
2	102	Business Communication Skills	2	202	Principles of Marketing
3	103	Business Accounting	3	203	Principles of Finance
4	104	Business Economics (Micro)	4	204	Basics of Cost Accounting
5	105	Business Mathematics	5	205	Business Statistics
6	106	Business Demography and Environmental Studies	6	206	Business Informatics

### B.B.A. Second Year (S.Y.) (2014-15)

Sr. No.	Sub. Code	Sem III	Sr. No.	Sub Code	Sem IV
1	301	Personality Development	1	401	Production and Operations Management
2	302	Business Ethics	2	402	Industrial Relations & Labour Laws
3	303	Human Resource Management and Organization Behaviour	3	403	Business Taxation
4	304	Management Accounting	4	404	International Business
5	305	Business Economics (Macro)	5	405	Management Information System
6	306	I.T. in Management	6	406	Business Exposure (Field Visits)

### B.B.A. Third Year (T.Y.) (2015-16)

Sr. No.	Sub. Code	Sem V	Sr. No.	Sub Code	Sem VI
1	501	Supply Chain and Logistics Management	1	601	Business Planning and Project Management
2	502	Entrepreneurship Development	2	602	Event Management
3	503	Business Law	3	603	Management Control System
4	504	Research Methodology ( Tools and Analysis)	4	604	E-Commerce
5	505	Specialization- I	5	605	Specialization- III
6	506	Specialization- II	6	606	Specialization- IV

#### Available Specializations

- 1) Finance      2) Marketing      3) Human Resource Management  
4) Service Sector Management      5) Agri Business Management

#### Semester I

## Business Organization and Systems

Course code 101

### Objectives:

1. To make the students aware about various activities of business, business practices and recent trends in business world.
2. To study the challenges before the businesses and setting up of a business enterprise.
3. To develop the spirit of entrepreneurship among the students.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Nature and Evolution of Business</b> 1.1 Human Occupations – characteristics of Business— Divisions of Business—Objectives of Business— Requisites for success in Business  1.2 Development of commerce – Evolution of Industry—The Industrial Revolution— Globalization—Emergence of MNCs  1.3 Recent Trends—Mergers and Acquisitions, Networking, Franchising. BPOs and KPOs, E-Commerce, On-line trading, Patents, trademarks and copy rights—Challenges before Indian business Sector	10
<b>Unit 2</b>	<b>Forms of Business Organizations</b> 2.1 Mixed Economy—Private Sector—Public Sector—Co- operative sector—Joint sector Service Sector  2.2 Forms of Business Organizations—Sole proprietorship— Partnership firm—Joint stock company—Features—Merits demerits and suitability of various forms of business	10
<b>Unit 3</b>	<b>Setting up of a Business Enterprise</b> 3.1 Decision in setting up of an enterprise—Opportunity and idea generation - Role of creativity and innovation 3.2 Project Report—Business size and Location decisions— Factors to be considered in starting a new unit—Government policies	10
<b>Unit 4</b>	<b>Domestic and Foreign Trade</b> 4.1 Whole sale and Retail Trade –Emergence of Foreign players in trading –Government policy-Effects of FDI on retail trade	10

	4.2 Organization of finance –Insurance—Transportation and communication and other Services—Import and Export procedure	
<b>Unit 5</b>	<b>Business and Society</b> 5.1 Objectives of Business—Changing concept, Professionalization 5.2 Business Ethics and culture—Technological and social changes –Social responsibility of business—CSR—Social Audit	08
	<b>Total</b>	48

**Recommended Books:**

1. *Modern Business Organization* - S.A. Sherlekar
2. *Industrial Organization Management* - Sherlekar
3. *Business Organization and management* – Y.K. Bhushan
4. *Business Organization and system* – Dr.M.V.Gite, Dr.R.D.Darekar, Prof.S.N.Nanaware, Dr.V.D. Barve- Success Publication,Pune
5. *Business Environment* - F. Cherunilam
6. *Business Organization & Management* – C.B. Gupta.
7. *Entrepreneurial Development* – S.S. Khanna.
8. *Organizing and Financing of Small scale Industry* – Dr. V. Desai

## Semester I

### Business Communication Skills

Course Code: 102

#### Objectives:

1. To improve various skills such as linguistic, non linguistic and Paralinguistic skills.
2. To develop an integrative approach where reading, writing, oral and speaking components are used together to enhance the students' ability to communicate and write effectively.
3. To create awareness among student about Methods and Media of communication.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Introduction to Communication</b> Meaning, Definition, objective, Process, importance. Principles of good Communication, Barriers to Communication, Overcoming Barriers.	08
<b>Unit 2</b>	<b>Methods and Types of Communication</b> Written Communication, Oral Communication, Silent Communication – Body Language, Proximity, Touch, Signs and Symbols, Paralinguistic, -Advantages and disadvantages of each	10
<b>Unit 3</b>	<b>Oral Communication</b> Meaning, Nature, Scope, Principles of Effective Oral Communication, Techniques of Effective Speech, Press Conference, Group Discussion, Interviews, Negotiation, Presentations, The Art of Listening, Principles of Good Listening, Barriers of Listening, Phone Etiquette, Grapevine	12
<b>Unit 4</b>	<b>Business Correspondence</b> Need, Functions, Component and layout of Business letter, Drafting of letters: Enquiry letter, Placing order, Complaints and follow up letters, Sales letter, Circulars, Application for employment and Resume, Notices, Agenda, Memo, Email etiquette	10
<b>Unit 5</b>	<b>Media of Communication</b> Introduction, Advantages and Disadvantages of – Telex, Telegram, Fax, Voice Mail, Teleconferencing, Video Conferencing, SIM Card, Dictaphone, SMS, MMS, Internet and Social Media Sites.	08
	<b>Total</b>	48

**Recommended Books:**

- 1) *Business Communication (Principles, Methods and Techniques)* - Nirmal Singh- Deep & Deep Publications Pvt. Ltd, New Delhi.
- 2) *Essentials of Business Communication – Rajendra Pal & J. S. Korhalli- Sultan Chand & Sons, New Delhi.*
- 3) *Media and Communication Management – C.S.Raydu - Himalaya Publishing House, Mumbai.*
- 4) *Professional Communication- Aruna Koneru- Tata McGraw-Hill Publishing Co. Ltd, New Delhi.*
- 5) *Creating a Successful CV - Siman Howard - Dorling Kindersley.*
- 6) *Business Communication skills – Dr.G.M.Dumbre, Dr.Anjali Kalkar, Dr.P.N.Shende, Dr.S.D.Takalkar-success Publication, Pune*
- 7) *Effective Documentation and Presentation- Urmila Rai & S.M. Rai – Himalaya Publishing House, Mumbai.*
- 8) *Principles Practices of Business Communication – Aspi Doctor & Rhoda Doctor – Sheth Publishers Pvt. Ltd.*
- 9) *Business Communication – Concepts, Cases and Applications – P.D. Chaturvedi, Mukesh Chaturvedi, 2<sup>nd</sup> Edition (2013)*



**Semester I**  
**Business Accounting**  
**Course Code – 103**

**Objectives:**

1. To enable the students to acquire sound knowledge of basic concepts of accounting
2. To impart basic accounting knowledge
3. To impart the knowledge about recording of transactions and preparation of final accounts
4. To acquaint the students about accounting software packages

	<b>Contents</b>	<b>No. of lectures</b>
<b>Unit 1</b>	<b>Introduction:</b> Financial Accounting-definition and Scope, objectives, Accounting concepts , principles and conventions Accounting Standards in general: - AS1, AS2, AS6.	6
<b>Unit 2</b>	<b>Accounting Transactions and Final Accounts :-</b> Voucher system; Accounting Process, Journals, Ledger, Cash Book , subsidiary books ,Trial Balance preparation of Final Accounts of Sole Proprietorship(Trading and Profit & Loss Account and Balance Sheet )	18
<b>Unit 3</b>	<b>Bank Reconciliation Statement :-</b> Meaning , importance and preparation of Bank Reconciliation Statement	12
<b>Unit 4</b>	<b>Depreciation:</b> - Meaning, need, importance and methods of charging depreciation - Written Down Value, Straight Line Method.	8
<b>Unit 5</b>	<b>Computerized Accounting:</b> Computers and Financial application, Accounting Software packages.	4
	<b>Total</b>	48

**Allocation of Marks:**

Theory - 30%

Practical problems - 70%

### **Recommended Books**

1. *Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education)*
2. *Business Accounting-Dr.G.M.Dumbre, Dr.Kishor Jagtap, Dr.A.H.Gaikwad, Dr.N.M.Nare-Success Publication,Pune*
2. *Financial accounting: By Jane Reimers (Pearson Education)*
3. *Accounting Made Easy By Rajesh Agarwal & R Srinivasan (Tata McGraw –Hill)*
4. *Financial Accounting For Management: By Amrish Gupta (Pearson Education)*
5. *Financial Accounting For Management: By Dr. S. N. Maheshwari (Vikas Publishing)*
6. *Advanced Accounts – M.C. Shukla and S P Grewal (S.Chand & Co., New Delhi)*

**Semester I**  
**Business Economics (Micro)**

**Course Code - 104**

**Objectives:**

1. To expose students to basic micro economic concepts.
2. To apply economic analysis in the formulation of business policies.
3. To use economic reasoning to problems of business.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>INTRODUCTION</b> 1.1 Meaning, Nature and Scope of Business Economics – Micro and Macro 1.2 Basic Economic Problems 1.3 Circular Flow of Income and Expenditure	07
<b>Unit 2</b>	<b>DEMAND and SUPPLY ANALYSIS</b> 2.1 Concept of Demand and Supply 2.2 Elasticity of Demand and their types. 2.3 Factors Affecting Supply 2.4 Concept and Law of Supply	09
<b>Unit 3</b>	<b>REVENUE AND COST ANALYSIS</b> 3.1 Revenue Concepts - Total Revenue, Marginal Revenue, Average Revenue and their relationship 3.2 Types of costs – i) Accounting Costs and Economic Costs ii) Short Run Cost Analysis: Fixed, Variable and Total Cost Curves, Average and Marginal Costs iii) Long Run Cost Analysis: Long Run Average and Marginal Cost Curves	10
<b>Unit 4</b>	<b>PRICING UNDER VARIOUS MARKET CONDITIONS</b> 4.1 Perfect Competition - Equilibrium of Firm and Industry under Perfect Competition 4.2 Monopoly - Price Determination under Monopoly 4.3 Monopolistic Competition – Non- price competition 4.4 Duopoly and Oligopoly – Meaning and characteristics	10
<b>Unit 5</b>	<b>DISTRIBUTION</b> 5.1 Rent: Modern Theory of Rent 5.2 Wages: Marginal Productivity Theory of Wage Determination 5.3 Interest: Liquidity Preference Theory of Interest 5.4 Profits: Dynamic, Innovation, Risk - Bearing and Uncertainty Bearing Theories of Profits	12
	<b>Total</b>	48

**Recommended Books:**

1. *Textbook of Economic Theory - Stonier and Hague; Longman Green and Co., London.*
2. *Introduction to Positive Economics - Richard G. Lipsey*
3. *Business Economics (Micro) - Dr. Girijashankar; Atharva Prakashan, Pune.*
4. *Micro Economics - M. L. Seth*
5. *Business Economics(Micro)-Dr.Girija Shankar, Dr.B.D.Khedkar, Dr.S.G.Shinde, Prof.Anjali Sane-Success Publication,Pune*
6. *Micro Economics - M. L. Jhingan; Vrinda Publications, New Delhi.*
7. *Business Economics – Dr. D. M. Mithani and Mrs. Anjali Sane, Himalaya Publications*

## Semester I

### Business Mathematics

Course code 105

#### Objectives:

1. To understand applications of matrices in business.
2. To understand the concept and application of Permutations & Combinations in business.
3. To use L.P.P. and its applications in business.
4. To understand the concept of Transportation problems & its applications in business world.
5. To understand the concept of shares & share market.

	Contents	No. of Lectures
<b>Unit 1</b>	<b>Shares and Dividends</b> Concept of Shares, Stock exchange, Face Value, Market Value, Dividend, Equity Shares, Preferential Shares, Bonus Shares, Examples.	08
<b>Unit 2</b>	<b>Permutations and Combinations</b> Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetition). $nPr = n! / (n-r)!$ (Without proof). Combinations of 'r' objects taken from 'n' objects. $nCr = n! / r! (n-r)!$ (Without proof) problems, Applications.	08
<b>Unit 3</b>	<b>Matrices and Determinants (up to order 3 only)</b> Multivariable data, Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Adjoint of a Matrix, Inverse of a Matrix via Adjoint Matrix, Homogeneous System of Linear equations, Condition for Uniqueness for the homogeneous system, Solution of Non-homogeneous System of Linear equations (not more than three variables). Condition for existence and uniqueness of solution, Solution using inverse of the coefficient matrix, Problems.	14
<b>Unit 4</b>	<b>Linear Programming problem (L.P.P.)</b> Meaning of LPP, Formulation of LPP, and solution by graphical methods.	10
<b>Unit 5</b>	<b>Transportation problem (T.P.)</b> Statement and meaning of T.P. methods of finding initial basic feasible solution by North West corner Rule, Matrix Minimum method and Vogel's approximation method. Simple numerical problems (concept of degeneracy is not expected).	08
	<b>Total</b>	48

**Reference Books:**

- 1) *Business Mathematics by Dr. Amarnath Dikshit & Dr. Jinendra Kumar Jain.*
- 2) *Business Mathematics by Padmalochan Hazarika – Sultan chand & sons, Delhi*
- 3) *Business Mathematics by Bari - New Literature publishing company, Mumbai*
- 4) *Operations Research by V.K. Kapoor - Sultan chand & sons*
- 5) *Operations Research by Dr. S. D. Sharma – Sultan Chand & Sons.*
- 6) *Operations Research by Dr. J. K. Sharma – Sultan Chand & Sons.*
- 7) *Business mathematics – Dr.Anwar Shaikh, Prof.R.G.Gurav, Prof.Tawade, Prof. Vaibhav Joshi- Success Publication,Pune*

## Semester I

### Business Demography and Environmental Studies

Course Code: 106

#### Objectives :

- 1) To develop knowledge base for demographic and environmental factors affecting business.
- 2) To make the students aware of environmental problems related to business and Commerce.
- 3) To inculcate values of Environmental ethics amongst the students.

	Contents	No. of Lectures
<b>Unit 1</b>	<b>Introduction of demography</b> 1.1 Meaning, Definition, Need, Importance & need of Demography Studies for Business 1.2 Scope of demography, interdisciplinary approach of demography 1.3 Components of demography: Fertility, mortality and migration 1.4 Measures to calculate fertility and mortality rate 1.5 Factors affecting fertility and mortality	10
<b>Unit 2</b>	<b>Distribution of Population and Population Growth</b> 2.1 Meaning of population distribution and population density, Physical and cultural factors affecting the distribution of population 2.2 Concepts of over, optimum and under population with suitable examples 2.3 Meaning and definition of population growth, Methods of calculating population growth 2.4 Population growth in India since 1901	08
<b>Unit 3</b>	<b>Population as Resource</b> 3.1 Meaning of resource, types of resources 3.2 Importance of human resource in development and growth of business 3.3 Concept of Literacy: importance of literate population as a resource 3.4 Concept of sex ratio, Concept of Age & Sex Pyramid, Types of age and sex pyramid, age and sex pyramids of different countries 3.5 Classification of population - Urban and rural population 3.6 Population below poverty line, working population, dependent Population	12
	<b>Urbanization</b>	06

<b>Unit 4</b>	4.1 Meaning, definitions of urbanization, factors responsible for urbanization and problems of urbanization 4.2 Urbanization as Behavioral concept, structural concepts and demographic concept	
<b>Unit 5</b>	<b>Environment and Environmental issues related to Business</b> 5.1 Meaning and definition of environment 5.2 Types of Environment 5.3 Physical and Cultural components of environment 5.4 Need of environmental studies for Business Management 5.5 Environment factors affecting Business – Physical factors –topography, climate, minerals, water resources; Cultural factors – infrastructure – technology tradition, political, social, education 5.6 Global warming and Kyoto Protocol, Oil Crisis and its impact on Business 5.7 Problems related to water resources 5.8 Types of pollution –Air, Water, Noise - Effects and causes of pollution 5.9 Remedial measures to control pollution 5.10 Interrelationship between industrialization and pollution	12
	<b>Total</b>	48

**Recommended books:**

1. *Population Geography* : R.C. Chandana, Lyall Book Depot/ Kalyani Publishers (2006)
2. *Population Geography*: Qazi, S. Shah, Shargi Qazi APH Publishing Corp. New Delhi
3. *Environmental Geography*: Dr. Savindra Singh Prayag Pustak Bhawan
4. *Geography of India*: Majid Hussain Tata McGraw Hill
5. *Population Geography* : I Singh: Alfa Publication (2006)
6. *Business Demography and Environmental studies*-Miss Joshi Sunita, Dr.Jaybhaye Ravindra- Success Publication,Pune



**Semester II**  
**Principles of Management**  
**Course Code – 201**

**Objectives:**

- a) To provide conceptual knowledge to the students regarding nature, complexity and various functions of management
- b) To give historical perspective of management
- c) Students will also gain some basic knowledge on recent trends and international aspects of management

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<p><b>Nature of Management</b></p> <p>1.1 Meaning, Definition, Nature, Importance &amp; Functions</p> <p>1.2 Management an Art, Science &amp; Profession-Management as social System</p> <p>1.3 Concept of Management-Administration-Organization-Universality of management</p>	08
<b>Unit 2</b>	<p><b>Evolution of management Thoughts</b></p> <p>2.1 Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, Chester Barnard &amp; Peter Drucker to the management thought</p> <p>2.2 Various approaches to management (i.e. School of management thought) Indian management Thought</p>	10
<b>Unit 3</b>	<p><b>Functions of Management : Part – I</b></p> <p>3.1 Planning –Meaning –Need &amp; Importance, types levels – advantages &amp; limitations; Forecasting- Need &amp; Techniques; Decision making – Types - Process of rational decision making &amp; techniques of decision making.</p> <p>3.2 Organizing – Elements of organizing &amp; process</p> <p>Types of organizations, Delegation of authority – Need, difficulties in delegation – Decentralization.</p> <p>3.3 Staffing – Meaning &amp; importance</p>	12
<b>Unit 4</b>	<p><b>Functions of Management : Part –II</b></p> <p>4.1 Direction - Nature – Principles</p>	10

	<p>Communication – Types &amp; Importance</p> <p>Motivation - Importance – Theories</p> <p>Leadership – Meaning - Styles, qualities &amp; functions of leaders</p> <p>4.2 Controlling – Need, nature, Importance, Process &amp; techniques</p> <p>4.3 Co-ordination - Need – Importance</p>	
<b>Unit 5</b>	<p><b>Recent Trends in Management</b></p> <p>5.1 Management of change</p> <p>5.2 Management of Crisis</p> <p>5.3 Total Quality Management</p> <p>5.4 Stress Management</p> <p>5.5 International Management</p>	08
	<b>Total</b>	48

**Recommended Books:**

1. *Essential of Management - Harold Koontz and Itenz Wiebritch- McGraw-Hill International*
2. *Management Theory & Practice – J.N. Chandan*
3. *Essential of Business Administration – K. Aswathapa, Himalaya Publishing House*
4. *Principles & Practice of management – Dr. L.M. Prasad, Sultan Chand & Sons – New Delhi*
5. *Business Organization & management – Dr. Y.K. Bhushan.*
6. *Management: Concept and Strategies by J.S. Chandan, Vikas Publishing.*
7. *Principles of Management, By Tripathi, Reddy Tata McGraw Hill*
8. *Business organization and management by Talloo by Tata Mc Graw Hill*
9. *Business Environment and policy – A book on Strategic Management/ Corporate Planning By Francis Cherunilam, Himalaya Publishing House.*
10. *Business Organization & Management – C.B. Gupta*

**Semester II**  
**Principles of Marketing**  
**Course Code: 202**

**Objectives:**

- a. To introduce and familiarize the student's basic concepts of marketing, its general nature, scope and importance.
- b. To impart appropriate knowledge and understanding of its primary functions and applications and its gradual evolution and development.
- c. To develop basic and essential skills related to marketing.
- d. To provide a learning platform for preparing students for marketing employability opportunities essential for industries.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<p><b>Introduction and Functions of Marketing</b></p> <p>1.1 Marketing – Definitions, Concept, objectives, importance and functions of marketing: on the basis of exchange, on the basis of physical supply and facilitating functions</p> <p>1.2 Approaches to the study of Marketing</p> <p>1.3 Relevance of Marketing in a developing economy.</p> <p>1.4 Changing profile and challenges faced by a Marketing manager</p>	08
<b>Unit 2</b>	<p><b>Classification and types of markets</b></p> <p>2.1 Traditional classification of marketing</p> <p>2.2 Service Marketing: 7P's of services marketing, importance of services marketing, importance of service sectors</p> <p>2.3 Rural Marketing: Meaning, feature &amp; importance of rural marketing, Difficulties in rural marketing and suggestions for improvement of Rural Marketing</p> <p>2.4 Retail marketing</p> <p>2.5 Tele marketing</p> <p>2.6 E-Marketing</p> <p>2.7 Digital marketing: meaning, importance of digital marketing</p> <p>2.8 Green marketing</p>	08
<b>Unit 3</b>	<p><b>Marketing Environment and Market Segmentation</b></p> <p>3.1 Marketing Environment – Meaning, Internal &amp; external factors influencing Marketing environment: political, social, economical, international, technological multi cultural environment</p> <p>3.2 Market Segmentation: Meaning, Definition, Essentials of effective Market Segmentation, types of segmentation</p>	08

<p><b>Unit 4</b></p>	<p><b>Marketing Mix</b></p> <p>4.1: Product mix and Price mix  Meaning, scope and importance of marketing mix</p> <ul style="list-style-type: none"> <li>a. Product mix: concept of a product, product characteristics: intrinsic and extrinsic , PLC, Product simplification, product elimination, product diversification , new product development</li> <li>b. Price mix : meaning, element , importance of price mix , factors influencing pricing , pricing methods and recent trends</li> </ul> <p>4.2 : Place mix and Promotion mix</p> <ul style="list-style-type: none"> <li>c. Place mix: meaning and concepts of channel of distribution, types of channel of distribution or intermediaries, Factors influencing selection of channels, types of distribution strategies: intensive, selective and extensive recent changes in terms of logistics and supply chain management.</li> <li>d. Promotion mix: meaning, elements of promotion mix: advertising: meaning, definitions, importance and limitations of advertising, types of media: outdoor, indoor, print, press, transit - merits and demerits, concept of media mix, Recent trends in promotion</li> </ul>	<p>16</p>
<p><b>Unit 5</b></p>	<p><b>Marketing Planning, Marketing Information System, Marketing Research</b></p> <p>5.1 Marketing planning: meaning, scope, importance, essentials and steps in marketing planning ,Importance and difficulties in marketing planning</p> <p>5.2 Marketing Information System: Concept, components and importance of Marketing Information System</p> <p>5.3 Marketing Research – Meaning, definitions, objectives and scope of marketing research, difference between market research and marketing research, types &amp; techniques of Marketing Research, Use of Marketing Research in management</p>	<p>10</p>
<p><b>Total</b></p>		<p>48</p>

All topics should be supported with assignments, group discussions, visits and case lets as per requirements.

**Reference Books**

1. *Marketing Management By Philip Kotler*
2. *Marketing Management Cravens By Hills – Woodruff*
3. *Marketing – A Managerial Introduction By Gandhi*
4. *Marketing Information System By Davis – Olsan*
5. *Consumer Behavior By Schiffman – Kanuk*
6. *Principles and practice of Marketing By John Frain.*

**Semester II**  
**PRINCIPLES OF FINANCE**  
**Course Code – 203**

**Objectives -**

1. To provide understanding of nature, importance, structure of finance related areas.
2. To impart knowledge regarding sources of finance for a business.

	<b>Contents</b>	<b>No. of lectures</b>
Unit 1	<b>Introduction</b> 1.1 Finance - Definition - Nature and scope of finance function 1.2 Financial Management - Meaning – Approaches :- Traditional , Modern 1.3 Role of finance manager.	4
Unit 2	<b>Sources of Finance</b> 2.1 External: - Shares, Debentures, Public Deposits, Borrowing from banks: - meaning, types, advantages and limitations of these sources. 2.2 Internal: - Reserves and surplus, Bonus shares, Retained earnings, Dividend policy; Meaning, advantages and limitations of these sources.	16
Unit 3	<b>Capital Structure</b> 3.1 Meaning - criteria for determining capital structure. 3.2 Factors affecting capital structure. 3.3 Capitalization:- Meaning , 3.4 Over capitalization and Under Capitalization - meaning, causes, consequences, remedies	14
Unit 4	<b>Financial planning</b> 4.1 Meaning and objectives 4.2 Process 4.3 Methods of forecasting 4.4 Basic considerations 4.5 Limitations.	6
Unit 5	<b>Recent Trends in business finance:-</b> Meaning and nature of- 5.1 Venture Capital 5.2 Leasing 5.3 Microfinance 5.4 Mutual Fund	8
	<b>TOTAL</b>	48

**BOOKS RECOMMENDED:**

1. P.V. Kulkarni - *Financial Management - Himalaya Publishing House, Mumbai.*
2. S.C. Kucchal - *Corporation Finance - Chaitanya Publishing House, Allahabad.*
3. I.M. Pandey - *Financial Management - Vikas Publishing House.*
4. R.M. Shrivastava - *Pragati Prakashan, Meerut.*
5. M.Y. Khan and P.K. Jain - *Financial Management - Tata - McGraw Hill Publishing co. Ltd., New Delhi.*
6. Prasanna Chandra - *Financial Management - Tata - McGraw Hill Publishing co. Ltd., New Delhi.*

## Semester II

### Basics of Cost Accounting Course Code: 204

#### Objectives:

1. To Impart the Knowledge of Basic cost concepts, element of cost & preparation of Cost Sheet.
2. To provide basic knowledge of important Methods of costing.

	Contents	No. of Lectures
Unit 1:	<b>Introduction</b> 1.1 Concept of Cost, Costing, Cost Accounting & Cost Accountancy 1.2 Limitations of Financial Accounting 1.3 Origin, Objectives and Features of Cost Accounting 1.4 Advantages and Limitations of Cost Accounting 1.5 Difference between Financial and Cost Accounting 1.6 Conceptual analysis of Cost Unit & Cost Centre	8
Unit 2:	<b>Elements of cost and Cost Sheet</b> 2.1 Material, Labour and other Expenses 2.2 Classification of Cost & Types of Costs 2.3 Preparation of Cost Sheet	10
Unit 3:	<b>Overheads</b> 3.1 Meaning and Definitions 3.2 Classification of Overheads 3.3 Collection, allocation, apportionment and reapportionment of overheads 3.4 Under and over absorption – Definition and Reasons	8
Unit 4	<b>Methods of Costing</b> 4.1. Contract Costing – Meaning and features of contract costing, works certified and uncertified, escalation clause, cost plus contract, work in progress, profit on incomplete contract 4.2. Process Costing - Meaning, Features of process costing, preparation of process costing including Normal and Abnormal Loss/Gains 4.3 Service costing – Meaning, Features and application, cost unit – simple and composite, Preparation of cost sheet for transport service	16
Unit 5	<b>Cost Audit:</b> 5.1_ Meaning , definition, objectives and scope 5.2 Advantages of Cost Audit 5.3 Difference between Financial and Cost Audit 5.4 Types of Cost Audit	6
	<b>Total</b>	48

**Allocation of Marks:**

Theory - 50%

Practical problems - 50%

**Area of Practical problems:**

Cost-Sheet

Contract costing

Process costing

Service costing

**Books Recommended: -**

1. *Advanced cost Accounting by S.P.Jain and Narong.*
2. *Cost Accounting by S.N.Maheshwari*
3. *Cost Accounting by Ratnam.*
4. *Practice in Advanced Costing and Management Accounting by Prof. Subhash Jagtap*
5. *Cost Accounting – Bhatta HSM, Himalaya Publication*
6. *Cost Accounting – Prabhu Dev , Himalaya Publication*
7. *Advanced Cost Accounting – Made Gowda, Himalaya Publication*
8. *Cost Accounting Principles and Practice by M.N.Arora*

**Semester II**  
**Business Statistics**  
**Course code 205**

**Objectives:**

1. To understand the basics of statistics - concept of population and sample & to use frequency distribution to make decision.
2. To understand and to calculate various types of averages and variation.
3. To understand Correlation and use of regression analysis to estimate the relationship between two variables and its applications.
4. To understand the concept - Time Series and its applications in business.
5. To understand the concept - Index numbers and applications in business.
6. To inculcate the research culture among students.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<p><b>Population and Sample:</b></p> <p>1.1 Definition of Statistics, Scope of Statistics in Economics, Management Sciences and Industry. Concept of population and sample with illustration.</p> <p>1.2 Methods of Sampling – SRSWR, SRSWOR, Stratified, Systematic. (Description of sampling procedures only). Data Condensation and graphical Methods: Raw data, attributes and variables, classification, frequency distribution, cumulative frequency distributions.</p> <p>1.3 Graphs - Histogram, Frequency polygon. Diagrams - Multiple bar, Pie, Subdivided bar.</p>	<b>08</b>
<b>Unit 2</b>	<p><b>Measures of Central Tendency &amp; Dispersion:</b></p> <p>2.1 Criteria for good measures of central tendency</p> <p>2.2 Arithmetic mean, Median and Mode for grouped and ungrouped data, combined mean.</p> <p>2.3 Concept of dispersion, Absolute and relative measure of dispersion, Range, Variance, Standard deviation, Coefficient of variation, Quartile Deviation, Coefficient of Quartile deviation.</p>	<b>11</b>
<b>Unit 3</b>	<p><b>Correlation and Regression (for ungrouped data):</b></p> <p>3.1 Concept of correlation, positive &amp; negative correlation</p> <p>3.2 Scatter Diagram, Karl Pearson's Coefficient of correlation</p> <p>3.3 Meaning of regression, Two regression equations, Regression coefficients and properties (Statements Only).</p>	<b>10</b>
<b>Unit 4</b>	<p><b>Time Series:</b></p>	<b>14</b>



	<p>4.1 Definitions and Utility of Time Series Analysis; Components of Time Series: Secular Trend, Seasonal Variation, and Cyclic Variation, Irregular or Erratic Variations.</p> <p>4.2 Measurement of Trend: Freehand or Graphic Method, Method of Semi-averages, Moving Average Method, Method of Least Squares.</p> <p>4.3 Measurement of Seasonal Variations: Method of Seasonal Averages, Ratio – to – trend Method, Moving Average method, Link Relative Method. (Only Application, No Proof required.)</p>	
<b>Unit 5</b>	<p><b>Index Numbers:</b></p> <p>5.1 Important definitions of Index Numbers</p> <p>5.2 Characteristics of Index Numbers, Uses of Index Numbers, Types of Index Numbers: Price Index, Quantity Index, Value Index, numerical problems</p> <p>5.3 Problems in the construction of Index Numbers; Methods of constructing Index Numbers. (Only Application, No Proof required.)</p>	<b>05</b>
	<b>Total</b>	<b>48</b>

**Recommended Books:**

1. S.C. Gupta – *Fundamentals of Statistics* - Sultan chand & Sons, Delhi.
2. D.N. Elhance – *Fundamentals of Statistics – Kitab Mahal, Allahabad.*
3. *Business Statistics* by N. D. Vohra – Tata Mc Graw Hill
4. *Fundamentals of Mathematical Statistics* by V.K. Kapoor -Sultan Chand & Sons, Delhi.

## Semester II

### Business Informatics

Course Code – 206

#### Objectives:

1. To know the basics of Computer
2. To understand the basics of networking
3. To know the basics of internet
4. To know the basics of databases

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Introduction to Computers</b> 1.1 Introduction 1.2 Characteristics of Computers 1.3 Block diagram of computer 1.4 Booting Process 1.5 Types of Programming Languages 1.5.1 Machine Languages 1.5.2 Assembly Languages 1.5.3 High Level Languages 1.6 Data Organization 1.6.1 Drives 1.6.2 Files 1.6.3 Directories 1.7 Storage Devices 1.7.1 Primary Memory 1.7.1.1 RAM 1.7.1.2 ROM 1.7.2 Secondary Storage Devices - FD, CD, HDD, Pen drive 1.8 I/O Devices 1.8.1 Monitor and types of monitor 1.8.2 Printer and types of printer 1.8.3 Scanners 1.8.4 Digitizers 1.8.5 Plotters 1.9 Number Systems 1.9.1 Introduction to Binary, Octal, Hexadecimal system 1.9.2 Conversion 1.9.3 Simple Addition, Subtraction, Multiplication, Division	10
<b>Unit 2</b>	<b>Operating System and Services in O.S.</b> 2.1 Definition of operating system 2.2 Services provided by OS 2.3 Types of O.S. 2.4 Features of Windows and Linux 2.5 Files and Directories	8

	2.6 Internal and External Commands of DOS 2.7 Batch Files	
<b>Unit 3</b>	<b>Editors and Word Processors</b> 3.1 Basic Concepts 3.2 Examples : MS-Word2007 3.3 Introduction to desktop publishing <b>Spreadsheets and Database packages</b> 3.4 Purpose 3.5 MS-Excel2007 3.6 Creation of table in MS-Access2007 3.7 MS –PowerPoint2007	9
<b>Unit 4</b>	<b>Introduction to Networking</b> 4.1 Basics of Computer Networks 4.2 Definition 4.2.1 Goals 4.2.2 Applications 4.2.3 Components 4.3 Topology 4.3.1 Types of Topology 4.4 Types of Networks 4.4.1 (LAN, MAN, WAN) 4.5 Modes of Communication : 4.5.1 (Simplex 4.5.2 Half Duplex 4.5.3 Full Duplex) 4.6 Transmission media 4.6.1 Twisted pair 4.6.2 Coaxial cable 4.6.3 Fiber optic cable 4.7 Protocols and purpose 4.8 Network Connectivity Devices 4.8.1 Hubs 4.8.2 Repeaters 4.8.3 Bridges 4.8.4 Switches 4.8.5 Gateways <b>Internet Basics</b> 4.9 Concept of Internet, Intranet and Extranet 4.10 Web Client 4.11 Web Server 4.12 WWW 4.13 Search Engine 4.14 Internet Service Providers(ISP)	15
<b>Unit 5</b>	<b>Introduction To R.D.B.M.S</b> 5.1 Advantages and Limitations 5.2 Normalization 5.3 Entity Relationships	6

	5.4 Use Of simple SQL Commands involving both single table and joins.	
	<b>Total</b>	<b>48</b>

**Reference Books:**

1. *Fundamental of Computers – By V. Rajaraman (Prentice Hall)*
2. *Fundamental of Computers – By P. K. Sinha (B.P.B publication)*
3. *Computer Applications in Management- By Niranjana Shrivastava ( Dreamtech Press)*
4. *MS- Office 2000(For Windows) – By Steve Sagman*
5. *Data Communications & Networking- Behrouz Ferouzan (III Edition)*

**First Year Bachelor of Business Administration (F.Y. BBA)**

**Pattern of Question papers (w.e.f. A.Y. 2013-2014)**

Following subjects have been identified as theory papers in First Year B.B. A. which will have uniform question paper format as given under:

**Semester I:**

- 1) 101 - Business Organization and Systems
- 2) 102 - Business Communication Skills
- 3) 104 - Business Economics (Micro)
- 4) 106 - Business Demography and Environmental Studies

**Semester II:**

- 1) 201 – Principles of Management
- 2) 202 – Principles of Marketing
- 3) 203 – Principles of Finance

**Question paper pattern for following Practical Subjects is given separately:**

**Semester I:**

- 1) 103 – Business Accounting
- 2) 105 – Business Mathematics

**Semester II:**

- 1) 204 – Basics of Cost Accounting
- 2) 205 – Business Statistics
- 3) 206 – Business Informatics

**First Year Bachelor of Business Administration (F.Y. B.B.A.)**

**Pattern of Question paper of Theory papers**

Time: 3 Hours

Total Marks: 80

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat and well labeled diagrams wherever necessary.

Q.1) Theory question (15)

**OR**

Theory Question

Q.2) Theory question (15)

**OR**

Theory Question

Q.3) Theory question (15)

**OR**

Theory Question

Q.4) Theory question (15)

**OR**

Theory Question

Q.5) Write Short Notes (Any **four** out of **six**) (20)

**Bachelor of Business Administration (B.B.A.) Semester I**

**Pattern of Question paper of Business Accounting**

Time: 3 Hours

Total Marks: 80

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Use of calculator is allowed.

Q1.	Objective Type Questions (True or False, Fill in the Blanks, Match the pairs)	12
Q2.	Write short notes on (Any three out of five)	12
Q3.	Practical Problem	20
Q4.	Practical Problem	18

**OR**

	Practical Problem	
Q5.	Practical Problem	18

**OR**

Practical Problem

**First Year Bachelor of Business Administration (F.Y. B.B.A.)**

**Pattern of Question paper of Business Mathematics and Business Statistics**

Time: 3 Hours

Total Marks: 80

**Instructions:**

1. All questions are compulsory.
2. All questions carry equal marks.
3. Use of simple electronic calculator is allowed.

Q.1) Answer the following (any four out of six)

Q.2) Answer the following (any four out of six)

Q.3) Answer the following (any four out of six)

Q.4) Answer the following (any four out of six)

Q.5) Answer the following (any two out of six)



**Bachelor of Business Administration (B.B.A.) Semester II**

**Pattern of Question paper of Basics of Cost Accounting**

Time: 3 Hours

Total Marks: 80

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Use of calculator is allowed.

Q1. Objective Type Questions 10

(True or False, Fill in the Blanks, Match the pairs)

Q2. Theory Question 15

**OR**

Theory Question

Q3. Write short notes on (Any three out of five) 15

Q4. Practical Problem 16

Q5. a) Practical Problem 12

b) Practical Problem 12

**OR**

Practical Problem

**Bachelor of Business Administration (B.B.A.) Semester II**

**Pattern of Question paper of Business Informatics**

Time: 3 Hours

Total Marks: 80

**Instructions:**

1. All questions are compulsory.
2. All questions carry equal marks.
3. Use of calculator is allowed.

Q.1) Answer the following (any eight out of ten)      Small Answer questions

Q.2) Attempt any four out of five Questions

Q.3) Attempt any four out of five Questions

Q.4) Attempt any four out of five Questions

Q.5) Attempt any two out of three Questions

## University of Pune

### Revised Structure & Syllabi for Three Year Degree Programme of Bachelor of Computer Applications (B.C.A.)

1. The title of the programme will be Bachelor of Computer Application (B.C.A.) under Commerce Faculty.

The revised program will be introduced for -

- a) F.Y.B.C.A. from the academic year 2013-14
- b) S.Y.B.C.A. from the academic year 2014-15
- c) T.Y.B.C.A. from the academic year 2015-16

2. Objectives : The objectives of the Programme shall be to provide sound academic base from which an advanced career in Computer Application can be developed. Conceptual grounding in computer usage as well as its practical business application will be provided.

3. Eligibility for admission : In order to be eligible for admission to Bachelor of Computer Applications a candidate must have passed.

- a. HSC (10+2) from any stream with English as passing Subject with minimum 40% marks in aggregate.
- b. Two years Diploma in Pharmacy Course of Board of Technical Education, conducted by Government of Maharashtra or its equivalent.
- c. Three Year Diploma Course (after S.S.C. i.e. 10<sup>th</sup> Standard), of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- d. MCVC
- e. Every eligible candidate has to pass Common Entrance Test to be conducted by the respective Institute/College.

4. Duration : The duration of the B.C.A. Degree Program shall be three years divided into six semesters.

5. The scheme of Examinations :

The BCA Examination will be of 3600 marks as given Below

I)

- a) F.Y.B.C.A. (Sem I + Sem II) : 1200 marks
- b) S.Y.B.C.A. (Sem III + Sem IV) : 1200 marks
- c) T.Y.B.C.A. (Sem V + Sem VI) : 1200 marks

II) For Theory Paper There Will Be 80:20 Pattern 80 Marks : University Exam  
20 Marks : Internal Exam

For Practical And Project Examination Sem I to VI : 100 marks

Sem I, II, III, IV, V, VI : External Assessment

## 6. The Standard of Passing and Award of Class

In order to pass in the examination the candidate has to obtain 40 marks out of 100. (Min 32 marks must be obtained in University Examination .

The class will be awarded on the basis of aggregate marks obtained by the candidate for all three years examinations .

The award of class will be as follows :

Aggregate Percentage of Marks	Class
(i) Aggregate 70% and above	..... First Class with Distinction.
(ii) Aggregate 60% and above but less than 70%	..... First Class
(iii) Aggregate 55% and more but less than 60%	..... Higher Second Class
(iv) Aggregate 50% and more but less than 55%.	..... Second Class.
(v) Aggregate 40% and more but less than 50%	..... Pass Class.
(vi) Below 40%	..... Fail.

## 7. RULES OF A.T.K.T.

a) A student shall be allowed to keep term for the Second Year, if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subjects of the First year examination, which consist of First & Second Semester.

b) A student shall be allowed to keep term for the Third year, if he/she has no backlog of first Year & if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subject of the Second Year examination which consist of Third & Fourth Semester.

8. The Medium of Instruction and Examination (Written and Viva ) shall be English.

9. The Semester wise Structure of the programme shall be as follows :

# Syllabus structure for the course of Bachelor of Computer Application [BCA]

[Under the Faculty of Commerce]

## Course Structure

### Semester – I (w.e.f A.Y. 2013-14)

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
101	Modern Operating Environment & MS Office	20	80	100	4	-
102	Financial Accounting	20	80	100	4	
103	Programming Principal & Algorithms	20	80	100	4	
104	Business Communication	20	80	100	4	
105	Principles of Management	20	80	100	4	
106	Laboratory Course – I [Based on Paper No. 101 & 102]	-	100	100	-	4
<b>Total</b>		<b>100</b>	<b>500</b>	<b>600</b>	<b>20</b>	<b>4</b>

### Semester – II (w.e.f A.Y. 2013-14)

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
201	Procedure Oriented Programming using C	20	80	100	4	-
202	Data Base Management System	20	80	100	4	
203	Organizational Behavior	20	80	100	4	
204	Computer Applications in Statistics	20	80	100	4	
205	E-Commerce Concepts	20	80	100	4	
206	Laboratory Course – II [Based on Paper No. 201 & 202]	-	100	100	-	4
<b>Total</b>		<b>100</b>	<b>500</b>	<b>600</b>	<b>20</b>	<b>4</b>

**Semester – III (w.e.f A.Y. 2014-15)**

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
301	Relational Database Management Systems	20	80	100	4	-
302	Data Structures using C	20	80	100	4	
303	Operating System Concepts	20	80	100	4	
304	Business Mathematics	20	80	100	4	
305	Software Engineering	20	80	100	4	
306	Laboratory Course – III [Based on Paper No. 301 and 302 ]	-	100	100	-	4
<b>Total</b>		<b>100</b>	<b>500</b>	<b>600</b>	<b>20</b>	<b>4</b>

**Semester – IV (w.e.f A.Y. 2014-15)**

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
401	OOP's using C++	20	80	100	4	-
402	Programming in Visual Basic	20	80	100	4	-
403	Computer Networking	20	80	100	4	-
404	Enterprise Resource Planning	20	80	100	4	-
405	Human Resource Management	20	80	100	4	-
406	Laboratory Course – IV [Based on Paper No. 401 & 402 ]	-	100	100	-	4
<b>Total</b>		<b>100</b>	<b>500</b>	<b>600</b>	<b>20</b>	<b>4</b>

**Semester - V(w.e.f A.Y. 2015-16)**

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
501	Java Programming	20	80	100	4	-
502	Web Technologies	20	80	100	4	
503	Dot Net Programming	20	80	100	4	
504	Object Oriented Software Engg.	20	80	100	4	
505	Software Project – I [Based on C++ / VB Technology]	-	100	100	-	4
506	Laboratory Course – V [Based on Paper No. 501 & 502 ]	-	100	100	-	4
<b>Total</b>		<b>80</b>	<b>520</b>	<b>600</b>	<b>16</b>	<b>8</b>

**Semester – VI (w.e.f A.Y. 2015-16)**

Paper No.	Name of the subject	Marks			No. of sessions per week	
		Int.	Uni.	Total	Th.	Pract.
601	Advanced Web Technologies	20	80	100	4	-
602	Advanced Java	20	80	100	4	
603	Recent Trends in IT	20	80	100	4	
604	Software Testing	20	80	100	4	
605	Software Project – II [Java / Dot net Technology]	-	100	100	-	4
606	Laboratory Course – VI [Based on Paper No. 601 & 602 ]	-	100	100	-	4
<b>Total</b>		<b>80</b>	<b>520</b>	<b>600</b>	<b>16</b>	<b>8</b>

### Equivalence Scheme

Sr.No	Old Course		New Course	
	Sub Code	Title of Subject	Sub Code	Title of Subject
01	101	Business Communication	104	Business Communication
02	102	Principles of Management	105	Principles of Management
03	103	Programming Principles and Algorithms	103	Programming Principles & Algorithms
04	104	Computer Fundamental and Office Automation	101	Modern Operating Environment & MS Office
05	105	Business Accounting	102	Financial Accounting
06	106	Computer Laboratory and Practical Work (OA+PPA)	106	Laboratory Course – I [Based on Paper No.101 & 102]
07	201	Organizational Behavior	203	Organizational Behavior
08	202	Elements of Statistics	204	Computer Application in Statistics
09	203	'C' Programming	201	Procedure Oriented Programming Using C
10	204	File Structure and Database Concepts	202	Database Management System
11	205	Cost Accounting	205	E-Commerce Concepts
12	206	Computer Laboratory and Practical Work ( c programming + DBMS)	206	Laboratory Course - II [Based on Paper No.201 & 202]
13	301	Numerical Methods	304	Business Mathematics
14	302	Data Structure using C	302	Data Structure using C
15	303	Software Engineering	305	Software Engineering
16	304	Management Accounting	303	Operating System Concepts
17	305	RDBMS	301	Relational Database Management System
18	306	Computer Laboratory and RDBMS)	306	Laboratory Course – III [Based on Paper No.301 and 302]
19	401	Networking	403	Computer Networking
20	402	Visual Basic	402	Programming in Visual Basic
21	403	Inventory Management (SAD)	404	Enterprise Resource Planning
22	404	Human Resource Management	405	Human Resource Management
23	405	Object Oriented Programming using C++	401	Object Oriented Programming using C++
24	406	Computer Laboratory and Practical Work ( VB + C++ )	406	Laboratory Course – IV [Based on Paper No. 401 & 402]
25	501	.NET Frameworks	503	Dot Net Programming
26	502	Internet Programming and Cyber Law	502	Web Technologies
27	503	Principals of Marketing	504	Object Oriented Software



				Engineering
28	504	Core Java	501	Java Programming
29	505	Project work ( VB )	505	Software Project- [Based on C++/VB Technology]
30	506	Computer Laboratory and Practical Work (.NET + Core Java )	506	Laboratory Course – V [Based on Paper No. 501 & 502]
31	601	E-Commerce	604	Software Testing
32	602	Multimedia Systems	603	Recent Trends in IT
33	603	Introduction to SysPro And Operating Systems	601	Advanced Web Technology
34	604	Advance Java	602	Advance Java
35	605	Project Work ( Banking & Finance , Cost Analysis , Financial Analysis ,Payroll , EDP ,ERP etc.)	605	Software Project – II [Java/ Dot net Technology]
36	606	Computer Laboratory and Practical Work (Multimedia + Advanced Java)	606	Laboratory Course – VI [Based on Paper No. 601 & 602]

**B.C.A. Semester I****Subject Name -: Modern Operating Environment And MS Office****Course Code -: 101**

<b>Chapter No.</b>	<b>Topic Name</b>	<b>No. Of Lectures</b>
1	<b>Introduction to computer</b> : Computer Characteristics, Concept of Hardware, Software , Evolution of computer and Generations, Types of computer – Analog & Digital computers, Hybrid computers, General purpose & Special Purpose Computer, Limitations of Computer Applications of Computer in Various fields.	6
2	<b>Structure and Working of Computer</b> : Functional Block diagram of computer. CPU, ALU, Memory Unit, Bus structure of Digital Computer - Address, data and control bus.	4
3	<b>Input /Output Devices</b> : Input device – Keyboard, Mouse, Scanner, MICR, OMR. Output devices – VDU, Printers – Dot Matrix, Daisy- wheel, Inkjet, Laser, Line printers and Plotters.	5
4	<b>Computer Memory</b> : Memory Concept , Memory cell, memory organization, Semiconductor memory- RAM, ROM, PROM, EPROM, Secondary Storage devices - Magnetic tape, Magnetic Disk (floppy disk & Hard disk.), Compact Disk.	6
5	<b>Computer Language and Software</b> :Algorithm, flowcharts, Machine language, Assembly language, High Level language, Assembler, Compiler, Interpreter. Characteristics of good Language. Software - System and application software.	5
6	<b>Operating System</b> :Operating system, Evolution of operating system. Function of operating system. Types of operating systems. Detailed study of Windows Operating System. Introduction and features of LINUX OS.	6
7	<b>Networking</b> : Concept, Basic elements of a Communication System, Data transmission media, Topologies, LAN, MAN, WAN, Internet	3
8	<b>MS-OFFICE</b> : Introduction to Ms-office, Components and features. <b>MS-Word</b> – Creating letter, table , fonts , page layout document formatting spell check, print preview, template, colour, mail merge, auto text, inserting picture , word art. <b>MS-EXCEL</b> – Introduction to Excel , Sorting , Queries, Graphs , Scientific functions. <b>Power Point</b> :- Introduction to Power Point Creation of Slides , Inserting pictures , Preparing slide show with animation. <b>MS-ACCESS</b> - Creation and Manipulation of Files.	12

**Books Recommended:-**

- 1) Computer Fundamentals by P.K. Sinha & Priti Sinha, 3rd edition, BPB pub.
- 2) Computers Today by S. Basandra Galgotia Pub.
- 3) Microsoft Office 2000 by Vipra Computers, Vipra Printers Pvt. Ltd.
- 4) Advanced Microsoft Office 2000 by Meredith Flynn, Nita Rutkosky, BPB Pub
- 5) using Microsoft office 2007 by Ed Bott ,Woody Leonhard , Pearson publication
- 6) using Microsoft office 2010 by , Pearson publication

**B.C.A. Semester I**  
**Subject Name :- Financial Accounting**  
**Course Code :- 102**

**Objectives:**

1. To enable the students to acquire sound knowledge of basic concepts of accounting
2. To impart basic accounting knowledge
3. To impart the knowledge about recording of transactions and preparation of final accounts
4. To acquaint the students about accounting software packages

	<b>Contents</b>	<b>No. of lectures</b>
<b>Unit 1</b>	<b>Introduction:</b> Financial Accounting- Definition, Scope, Objectives & Limitations Distinction between Accounting & Book Keeping, Branches of Accounting	06
<b>Unit 2</b>	<b>Conceptual Frame work:</b> Accounting Concepts, Principles & Conventions Accounting Standards - Concept, objectives, benefits, Overview of Accounting Standards in India. Accounting Policies, Accounting as a measurement Discipline, Valuation Principles, Accounting Estimates	06
<b>Unit 3</b>	<b>Recording of Transactions:</b> Voucher system; Accounting Process, Journals, Ledger, Cash Book , subsidiary books ,Trial Balance. Depreciation: Meaning , Need, Importance & Methods ( WDV & SLM)	16
<b>Unit 4</b>	<b>Preparation of Final Accounts:</b> Preparation of Trading Account, Profit & Loss Account & Balance Sheet of Sole Proprietary Business.	10
<b>Unit 5</b>	<b>Introduction to Company Final Accounts:</b> Important provisions of Companies Act 1956 in respect of preparation of final Accounts. Understanding the final accounts of a Company	04
<b>Unit 6</b>	<b>Accounting in Computerized Environment:</b> Computers and Financial Application Introduction to Accounting Software Package - Tally 9.0 An overview of Computerized Accounting systems - Salient Features and significance , Generating Accounting Reports,	06
<b>Total</b>		48

**Recommended Books :**

1. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education)
2. Financial accounting: By Jane Reimers (Pearson Education)
3. Accounting Made Easy By Rajesh Agarwal & R Srinivasan (Tata McGraw –Hill)
4. Financial Accounting For Management: By Amrish Gupta (Pearson Education)
5. Financial Accounting For Management: By Dr. S. N. Maheshwari (Vikas Publishing)
6. Advanced Accounts – M.C. Shukla and S P Grewal (S.Chand & Co., New Delhi)

**B.C.A. Semester I**  
**Subject Name -: Principles of Programming and Algorithms**  
**Course Code -: 103**

Pre requisite: Basic Mathematics

Objectives: To develop Analytical / Logical Thinking and Problem Solving capabilities

Ch.1 Introduction [5]

- 1.1 Concept: problem solving, algorithm
- 1.2 Program development cycle
- 1.3 Characteristics of an algorithm
- 1.4 Time complexity: Big-Oh notation
- 1.5 Flowcharts
- 1.6 Simple Examples: Algorithms and flowcharts

Ch. 2 Simple Arithmetic Problems [13]

- 2.1 Addition / Multiplication of integers
- 2.2 Determining if a number is +ve / -ve / even / odd
- 2.3 Maximum of 2 numbers, 3 numbers
- 2.4 Sum of first n numbers, given n numbers
- 2.5 Integer division, Digit reversing, Table generation for n, ab
- 2.6 Factorial, sine series, cosine series, nCr , Pascal Triangle
- 2.7 Prime number, Factors of a number
- 2.8 Other problems such as Perfect number, GCD of 2 numbers etc  
(Write algorithms and draw flowcharts)

Ch. 3 Recursion [8]

- 3.1 Concept
- 3.2 Multiplication
- 3.3 Factorial
- 3.4 Ackerman function
- 3.5 Fibonacci series
- 3.6 Permutation Generation

Ch. 4 Algorithms using arrays [8]

- 4.1 Maximum and minimum of array, reversing elements of an array
- 4.2 Mean and Median of n numbers
- 4.3 Row major and Column major form of array representation
- 4.4 Matrices: Addition, Multiplication, Transpose, Symmetry, upper/lower triangular

Ch. 5 Sorting and Searching [13]

- 5.1 Insertion sort
- 5.2 Bubble sort
- 5.3 Selection sort

5.4 Quick sort (Recursive)

5.5 Merge sort

5.6 Radix Sort

5.7 Bucket Sort

5.8 Counting Sort

5.9 Sequential and Binary search

(Performance Analysis for space requirement and speed using Big-Oh notation is essential)

**Reference Books:**

1. How to solve it by Computer – R. G. Dromy

2. Fundamentals of Data Structures – Horowitz and Sahani

3. Introduction to algorithms – Cormen, Leiserson, Rivest, Stein

**B.C.A. Semester I**  
**Subject Name -: Business Communication**  
**Course Code -: 104**

**Objectives:**

1. To understand the concept, process and importance of communication.
2. To develop an integrative approach where reading, writing, presentation skills are used together to enhance the students' ability to communicate and write effectively.
3. To create awareness among students about Methods and Media of communication.
4. To make students familiar with information technology and improve job seeking skills.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Introduction to Communication</b> 1.1 Meaning 1.2 Definition 1.3 Objective, Process, importance. 1.4 Principles of effective communication 1.5 Barriers to Communication and its types 1.6 Overcoming Barriers.	08
<b>Unit 2</b>	<b>Methods of Communication</b> <b>2.1 Verbal Communication</b> 2.1.1 – Written Communication-Advantages & Limitations (Letters, Memo, Agenda, Notice & Reports) 2.2.2 Oral Communication ) -Advantages & Limitations (Personal & Telephonic) <b>2.2 Non-Verbal Communication</b> -Advantages & Limitations 2.2.1 Silence 2.2.2 Body Language 2.2.3 Signs & Symbols <b>2.3 Grapevine</b>	10
<b>Unit 3</b>	<b>Oral Communication</b> 3.1 Meaning, Nature, Scope 3.2, Principles of Effective Oral Communication 3.3 Techniques of Effective Speaking 3.4. The Art of Listening, 3.5 Principles of Good Listening- Barriers to Listening	08
<b>Unit 4</b>	<b>Business Correspondence</b> 4.1 Need, Functions of Business Correspondence 4.2 Components and layout of Business letter, 4.3 Drafting of letters: Enquiry, order , Complaints and follow up , Sales, Circulars. 4.4 Email etiquette	08
<b>Unit 5</b>	<b>Information Technology for Communication</b> Introduction, Advantages and Limitations of – Telex, Telegram, Fax, Voice Mail, Teleconferencing, Video Conferencing, Internet and Social Media Sites, E-communication at work place.	08
<b>Unit 6</b>	<b>Job Seeking Skills</b> 6.1 Job application letter 6.2 Curriculum Vitae	06

	6.3 Group Discussion 6.4 Interview Skills 6.5 Presentation Skills	
	<b>Total</b>	48

**Recommended Books:**

1. Business Communication (Principles, Methods and Techniques) Nirmal Singh Deep & Deep Publications Pvt. Ltd, New Delhi.
2. Essentials of Business Communication Rajendra Pal & J. S. Korlhalli Sultan Chand & Sons, New Delhi.
3. Media and Communication Management – C.S.Raydu Himalaya Publishing House, Mumbai.
4. Professional Communication- Aruna Koneru- Tata McGraw-Hill Publishing Co. Ltd, New Delhi.
5. Creating a Successful CV - Siman Howard - Dorling Kindersley.
6. Business Communication – Dr.Anjali Kalkar, Ashapak G.Nadaf , Tech- Max Publication, Pune
7. Effective Documentation and Presentation- Urmila Rai & S.M. Rai – Himalaya Publishing House, Mumbai.
8. Principles Practices of Business Communication – Aspi Doctor & Rhoda Doctor – Sheth Publishers Pvt. Ltd.
9. Business Communication – Concepts, Cases and Applications – P.D. Chaturvedi, Mukesh Chaturvedi, 2nd Edition (2013)



**B.C.A. Semester I**  
**Subject Name -: Principles of Management**  
**Course Code -: 105**

**Objectives:**

1. To provide the fundamental knowledge about working of business organization.
2. To make students well acquainted with management process , functions and principles.
3. To make the students familiar with recent trends in management.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Nature of Management</b> 1. Meaning, Definition, Nature, Importance & Functions 2. Management an Art, Science & Profession-Management as social System 3. Concept of Management-Administration-Organization-Universality of management	08
<b>Unit 2</b>	<b>Evolution of management Thoughts</b> 2.1 Contribution of F.W.Taylor, Henri Fayol, Elton Mayo	08
<b>Unit 3</b>	<b>Functions of Management : Part – I</b> 3.1 Planning –Meaning –Need & Importance, types levels –advantages & limitations; 3.2 Forecasting- Need & Techniques; 3.3 Decision making – Types - Process of rational decision making & techniques of decision making. 3.4 Organizing – Elements of organizing & process Types of organizations, 3.5 Delegation of authority – Need, difficulties in delegation – Decentralization. 3.6 Staffing – Meaning & importance	08
<b>Unit 4</b>	<b>Functions of Management : Part –II</b> 4.1 Direction - Nature – Principles 4.2 Motivation - Importance – Theories 4.3 Leadership – Meaning - qualities of effective Leadership & functions of leader 4.4 Co-ordination - Need – Importance 4.5 Controlling – Need, nature, Importance, Process & techniques	08
<b>Unit 5</b>	<b>Strategic Management</b> 5.1 Definition, 5.2 Classes of Decisions 5.3 Levels of Decisions 5.4 Strategy 5.5 Role of Strategic Management and its benefits 5.6 Strategic Management in India	08
<b>Unit 6</b>	<b>Recent Trends in Management</b> 6.1 Management of change 6.2 Disaster Management 6.3 Total Quality Management 6.4 Stress Management 6.5 Social Responsibility of management	08
	<b>Total</b>	48

***Recommended Books:***

- i. Essential of Management - Harold Koontz and Itenz Wiebritch- McGraw-Hill International
- ii. Management Theory & Practice – J.N. Chandan
- iii. Essential of Business Administration – K. Aswathapa, Himalaya Publishing House
- iv. Principles & Practice of management – Dr. L.M. Prasad, Sultan Chand & Sons – New Delhi
- v. Business Organization & management – Dr. Y.K. Bhushan.
- vi. Management: Concept and Strategies by J.S. Chandan, Vikas Publishing.
- vii. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
- viii. Business organization and management by Talloo by Tata Mc Graw Hill
- ix. Business Environment and policy – A book on Strategic Management/ Corporate Planning  
By Francis Cherunilam, Himalaya Publishing House.
- x. Business Organization & Management – C.B. Gupta
- xi. Dictionary of Commerce & Management -- J.L. Hanson

**B.C.A. Semester II****Subject Name -: Procedure Oriented Programming using C****Course Code -: 201**

<b>Chapter No.</b>	<b>Topics</b>	<b>No. of Lectures</b>	<b>Ref. Book</b>
1	<b>Introduction to C language</b> 1.1 History 1.2 Basic structure of C Programming 1.3 Language fundamentals 1.3.1 Character set, tokens 1.3.2 Keywords and identifiers 1.3.3 Variables and data types 1.4 Operators 1.4.1 Types of operators 1.4.2 Precedence and associativity 1.4.3 Expression	4	Book 1, 2
2	<b>Managing I/O operations</b> 2.1 Console based I/O and related built-in I/O functions 2.1.1 printf(), scanf() 2.1.2 getch(), getchar() 2.2 Formatted input and formatted output	2	Book 1, 2
3	<b>Decision Making and looping</b> 3.1 Introduction 3.2 Decision making structure 3.2.1 If statement 3.2.2 If-else statement 3.2.3 Nested if-else statement 3.2.4 Conditional operator 3.2.5 Switch statement 3.3 Loop control structures 3.3.1 while loop 3.3.2 Do-while loop 3.3.3 For loop 3.3.4 Nested for loop 3.4 Jump statements 3.4.1 break 3.4.2 continue 3.4.3 goto 3.4.4 exit	6	Book 1, 2
4	<b>Functions and pointers</b> 4.1 Introduction 4.1.1 Purpose of function 4.1.2 Function definition 4.1.3 Function declaration 4.1.4 Function call 4.2 Types of functions	12	Book 1, 2,3

	4.3 Call by value and call by reference 4.4 Storage classes 4.5 Recursion 4.6 Introduction to pointer 4.6.1 Definition 4.6.2 Declaration 4.6.3 Initialization 4.7 Indirection operator and address of operator 4.8 Pointer arithmetic 4.9 Dynamic memory allocation 4.10 Functions and pointers		
5	<b>Arrays and Strings</b> 5.1 Introduction to one-dimensional Array 5.1.1 Definition 5.1.2 Declaration 5.1.3 Initialization 5.2 Accessing and displaying array elements 5.3 Arrays and functions 5.4 Introduction to two-dimensional Array 5.4.1 Definition 5.4.2 Declaration 5.4.3 Initialization 5.5 Accessing and displaying array elements 5.6 Introductions to Strings 5.6.1 Definition 5.6.2 Declaration 5.6.3 Initialization 5.7 Standard library functions 5.8 Implementations without standard library functions.	8	Book 1, 2
6	<b>Structures and union</b> 6.1 Introduction to structure 6.1.1 Definition 6.1.2 Declaration 6.1.3 Accessing members 6.2 structure operations 6.3 nested structure 6.4 Introduction to union 6.4.1 Definition 6.4.2 Declaration 6.5 Differentiate between structure and union	5	Book 1, 2
7	<b>C Preprocessor</b> 7.1 Definition of preprocessor 7.2 Macro substitution directory 7.3 File inclusion directory 7.4 Conditional compilation	2	Book 1, 2
8	<b>File handling</b> 8.1 Definitions of files 8.2 File opening modes 8.3 Standard functions	9	Book 1, 2

	8.4 Random access to files		
	8.5 Command line argument		
<b>Total</b>		<b>48</b>	

**Reference Book :-**

- 1) Let us C –Yashwant Kanetkar, BPB publication.
- 2) Programming in C - Balguruswamy, Tata McGraw-Hill publication.
- 3) Pointers in C - Yashwant Kanetkar, BPB publication.
- 4) C programming by Dr.Vishal Lichade dreamtech press

**B.C.A. Semester II**  
**Subject Name -: Database Management Systems**  
**Course Code -: 202**

<b>Sr. No.</b>	<b>Chapter No.</b>	<b>Name of Chapter and Contents</b>	<b>No. of Lect.</b>	<b>Reference</b>
<b>1</b>	<b>1</b>	<b>File Structure and Organization</b> 1.1 Introduction 1.2 Logical and Physical Files 1.2.1 File 1.2.2 File Structure 1.2.3 Logical and Physical Files Definitions 1.3 Basic File Operations 1.3.1 Opening Files 1.3.2 Closing Files 1.3.3 Reading and Writing 1.3.4 Seeking 1.4 File Organization 1.4.1 Field and Record structure in file 1.4.2 Record Types 1.4.3 Types of file organization 1.4.3.1 Sequential 1.4.3.2 Indexed 1.4.3.3 Hashed 1.5 Indexing 1.5.1 What is an Index? 1.5.2 When to use Indexes? 1.5.3 Types of Index 1.5.3.1 Dense Index 1.5.3.2 Sparse Index	<b>6</b>	<b>1</b>
<b>2</b>	<b>2</b>	<b>Database Management System</b> 2.1 Introduction 2.2 Basic Concept and Definitions 2.2.1 Data and Information 2.2.2 Data Vs Information 2.2.3 Data Dictionary 2.2.4 Data Item or Field 2.2.5 Record 2.3 Definition of DBMS 2.4 Applications of DBMS 2.5 File processing system Vs DBMS 2.6 Advantages and Disadvantages of DBMS 2.7 Users of DBMS 2.7.1 Database Designers 2.7.2 Application programmer 2.7.3 Sophisticated Users 2.7.4 End Users 2.8 Views of Data 2.9 Data Models	<b>14</b>	<b>1</b>

		2.9.1 Object Based Logical Model <ul style="list-style-type: none"> <li>a. Object Oriented Data Model</li> <li>b. Entity Relationship Data Model</li> </ul> 2.9.2 Record Base Logical Model <ul style="list-style-type: none"> <li>a. Relational Model</li> <li>b. Network Model</li> <li>c. Hierarchical Model</li> </ul> 2.10 Entity Relationship Diagram (ERD) 2.11 Extended features of ERD 2.12 Overall System structure		
<b>3</b>	<b>3</b>	<b>Relational Model</b> 3.1 Introduction 3.2 Terms <ul style="list-style-type: none"> <li>a. Relation</li> <li>b. Tuple</li> <li>c. Attribute</li> <li>d. Cardinality</li> <li>e. Degree of relationship set</li> <li>f. Domain</li> </ul> 3.3 Keys <ul style="list-style-type: none"> <li>3.3.1 Super Key</li> <li>3.3.2 Candidate Key</li> <li>3.3.3 Primary Key</li> <li>3.3.4 Foreign Key</li> </ul> 3.4 Relational Algebra Operations <ul style="list-style-type: none"> <li>a. Select</li> <li>b. Project</li> <li>c. Union</li> <li>d. Difference</li> <li>e. Intersection</li> <li>f. Cartesian Product</li> <li>g. Natural Join</li> </ul>	<b>8</b>	<b>1</b>
<b>4</b>	<b>4</b>	<b>SQL (Structured Query Language)</b> 4.1 Introduction 4.2 History Of SQL 4.3 Basic Structure 4.4 DDL Commands 4.5 DML Commands 4.6 Simple Queries 4.7 Nested Queries 4.8 Aggregate Functions	<b>12</b>	<b>2</b>
<b>5</b>	<b>5</b>	<b>Relational Database Design</b> 5.1 Introduction 5.2 Anomalies of un normalized database 5.3 Normalization 5.4 Normal Form <ul style="list-style-type: none"> <li>5.4.1 1 NF</li> <li>5.4.2 2 NF</li> <li>5.4.3 3 NF</li> </ul>	<b>5</b>	<b>1</b>

		5.4.3.4 BCNF		
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**References:**

- 1) Database System Concepts By Henry korth and A. Silberschatz
- 2) SQL, PL/SQL The Programming Language Oracle :- Ivan Bayross, BPB Publication.
- 3) Database Systems Concepts, Designs and Application by Shio Kumar Singh, Pearson
- 4) Introduction to SQL by Reck F. van der Lans by Pearson
- 5) Modern Database Management by Jeffery A Hoffer , V.Ramesh, Heikki Topi , Pearson
- 6) Database Management Systems by Debabrata Sahoo ,Tata Macgraw Hill



**B.C.A. Semester II****Subject Name :- Organizational Behavior****Course Code :- 203****Objectives:**

- 1) To equip the students to understand the impact that individual, group & structures have on their behavior within the organizations.
- 2) To help them enhance and apply the knowledge they have received for the betterment of the organization.

	<b>Contents</b>	<b>No. of Lectures</b>
<b>Unit 1</b>	<b>Fundamentals of Organizational Behavior</b> Definition, Nature, Scope, and Goals of Organizational Behavior Fundamental Concepts of Organizational Behavior Models of Organizational Behavior Emerging aspects of Organizational Behavior: TQM, Managing Cultural Diversity, Quality Circles & Total Employee involvement	08
<b>Unit 2</b>	<b>2. Attitude Values and Motivation</b> Effects of employee attitudes Personal and Organizational Values Nature and Importance of Motivation, Motivation Process - Motivation Model <b>Theories of Work Motivation:</b> (a) Maslow's Need Hierarchy Theory, (b) McGregors's Theory 'X' and Theory 'Y' (c) Herzberg's Two factor theory of Motivation	08
<b>Unit 3</b>	<b>3. Personality</b> Definition of Personality, Determinants of Personality Theories of Personality – Trait theory : The Big Five Model Type Theory : Myers- Briggs Type Personality Self Theory : Locus of Control	08
<b>Unit 4</b>	<b>4. Work Stress</b> Meaning and definition of Stress, Sources of Stress: Individual Level, Organizational Level, Type A and Type B Assessment of Personality Causes of stress in organization Effect of Stress – Physiological Effect, Psychological Effect, Behavioral Impact Stress Management – Individual Strategies, Organizational Strategies	08
<b>Unit 5</b>	<b>Conflict in Organizations</b> Concept of Conflict, Process of Conflict Types of Conflict – Intrapersonal, interpersonal, intergroup, organizational, Johari Window Effects of Conflict, Conflict management Strategies	08
<b>Unit 6</b>	<b>6. Group Behavior and Change in Organization</b> Nature of Group, Types of Groups Team Building & Effective Teamwork Goals of Organizational Change, resistance to change, Overcoming resistance to change.	08

**Books Recommended:-**

1. Organizational Behavior Text, Cases and Games- By K. Aswathappa, Himalaya Publishing House, Mumbai, Sixth Edition (2005)
2. Organizational Behavior Human Behavior at Work By J. W. Newstrom, Tata McGraw Hill Publishing Company Limited, New Delhi, 12th Edition (2007)
3. Organizational Behavior - By Fred Luthans - McGRAW – HILL
4. Organizational Behavior - By **Super Robbins**
5. Organizational Behavior - Anjali Ghanekar - Everest Publishing House
6. Organizational Behavior Fundamentals, Realities and Challenges By Detra Nelson, James Campbell Quick Thomson Publications
7. Organizational Behavior through Indian Philosophy By M.N. Mishra, Himalaya Publication House
8. Organizational Behavior - Stephen P. Robbins, Timothy A. Judge, Seema Sanghi - Pearson Prentice Hall

## B.C.A. Semester II

**Subject Name :- Elements of Statistics**

**Course Code :- 204**

### **Objectives:**

1. To understand the power of excel spreadsheet in computing summary statistics.
2. To understand the concept of various measures of central tendency and variation and their importance in business.
3. To understand the concept of probability, probability distributions and simulations in business world and decision making.

### **Unit 1.** Introduction to statistical functions of Excel (12)

Concept of population and sample, Qualitative and Quantitative variables, Raw data, Basic Spreadsheet concept, data entry and its summary statistics using excel functions, preparation of grouped and ungrouped frequency distribution using excel, creating bar charts and pie chart, frequency curves and ogive curves.

**( There will be no theory question on above chapter separate practical exam of 20 marks of one hour should be conducted on it)**

### **Unit 2. Methods of counting (06)**

#### **Fundamental principals of counting**

Permutations and combination of n dissimilar objects taken r at a time, example and problems.

### **Unit 3.** Elements of Probability Theory (12)

Random experiments, all possible outcomes (sample space), events, algebra of events.

Classical definition of probability, addition theorem of probability(without proof), Independence of events, Simple numerical problems.

### **Unit 4.** Standard Discrete Distributions (08)

Discrete Uniform : Probability distribution, cumulative probability distribution, mean, variance (without proof)

Bernoulli : Probability function, Mean and variance

Binomial : Probability distribution, cumulative probability distribution, mean, variance( without proof)

Examples and problems.

### **Unit 5:** Simulation Techniques (10)

Random Number Generator

Model sampling from discrete uniform and binomial distributions

Monte Carlo Simulation examples and problems.

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Total lectures: 48

**B.C.A. Semester II****Subject Name :- E-Commerce Concepts****Course Code :- 205**

<b>Sr. No</b>	<b>Chapter No.</b>	<b>Name Of Chapter and Contents</b>	<b>No. of Lectures</b>	<b>Reference Book no.</b>
<b>1</b>	<b>1</b>	<b>Introduction to Electronic Commerce</b> 1.1 What is E-Commerce (Introduction and Definition) 1.2 Main activities E-Commerce 1.3 Goals of E-Commerce 1.4 Technical Components of E-commerce 1.5 Functions of E-commerce 1.6 Advantages and Disadvantages of E-commerce 1.7 Scope of E-commerce 1.8 Electronic commerce Applications 1.9 Electronic commerce and Electronic Business ( C2C)(2G , G2G , B2G , B2P,B2A,P2P, B2A, C2A, B2B,B2C)	<b>6</b>	<b>4</b>
<b>2</b>	<b>2</b>	<b>Building own website</b> 2.1 Reasons for building own website 2.2 Benefits of website 2.3 Bandwidth requirements 2.4 Cost , Time , Reach 2.5 Registering a Domain Name 2.6 Web promotion 2.7 Target email , Banner Exchange , Shopping Bots	<b>7</b>	<b>4</b>
<b>3</b>	<b>3</b>	<b>Internet and Extranet</b> 3.1 Definition of Internet 3.2 Adv and Dis adv of the Internet 3.3 Component of a Intranet Information technology structure 3.4 Development of a Intranet 3.5 Extranet and Intranet Difference 3.6 Role of Intranet in B2B Application	<b>5</b>	<b>4</b>
<b>4</b>	<b>4</b>	<b>Electronic payment System</b> 4.1 Introduction 4.2 Types of Electronic payment system 4.3 Payment types 4.4 Traditional payment 4.5 Value exchange system 4.6 Credit card system 4.7 Electronic funds transfer 4.8 Paperless bill 4.9 Modern payment cash 4.10 Electronic cash	<b>6</b>	<b>1,2</b>
<b>5</b>	<b>5</b>	<b>Technology Solution</b> 5.1 Protecting Internet Communications 5.2 Encryption 5.3 Symmetric Key Encryption 5.4 Public key Encryption	<b>6</b>	<b>1,2</b>

		5.5 Public Key Encryption using digital signatures 5.6 Digital Envelopes 5.7 Digital Certificates 5.8 Limitations to Encryption solutions.		
<b>6</b>	<b>6</b>	<b>E-com Security</b> 6.1 E-commerce security environment 6.2 Security threats in E-com environment 6.3 Malicious code and unwanted programs 6.4 Phishing and identity theft 6.5 Hacking and cyber vandalism 6.6 Credit card fraud/Theft 6.7 Spoofing 6.8 Denial of service(DOS) 6.9 Distributed denial of service(dDOS)	<b>6</b>	<b>1,2</b>

**References :**

1. E-Commerce- Kenneth C.Laudon and Carol Guercio Traver
2. E-Commerce by --Kamlesh K Bajaj and Debjani Nag
3. Internet marketing and E-commerce-Ward Hanson and Kirthi Kalyanam
4. E-Commerce Concepts , Models , Strategies by -- G.S.V Murthy
5. Electronic Commerce by --Gary P. Schneider

**University of Pune**  
( Pattern – 2013 ) w.e.f. 2014 – 15

**B.C.A. Semester III**

**Subject Name:- RDBMS (Relational Database Management System)**  
**Course Code:- 301**

**Objectives:**

1. Enables students to understand relational database concepts and transaction management concepts in database system.
2. Enables student to write PL/SQL programs that use: procedure, function, package, cursor and trigger.

Unit	Topic	No. of Lectures	Ref. Book
<b>Unit 1</b>	<b>Introduction To RDBMS</b> 1.1 Introduction to popular RDBMS product and their features 1.2 Difference Between DBMS and RDBMS 1.3 Relationship among application programs and RDBMS	<b>2</b>	1
<b>Unit 2</b>	<b>PLSQL</b> 2.1 Overview of PLSQL 2.2 Data Types 2.3 PLSQL Block 2.3.1 % type, % rowtype 2.3.2 Operators, Functions, comparison, numeric, character, date 2.3.3 Control Statement 2.4 Exception Handling 2.4.1 Predefined 2.4.2 User defined exceptions 2.5 Functions , Procedures 2.6 Cursor 2.6.1 Definition 2.6.2 Types of cursor- implicit, explicit (attributes) 2.6.3 Parameterized cursor 2.7 Trigger 2.8 Package	<b>20</b>	4
<b>Unit 3</b>	<b>Transaction Management</b> 3.1 Transaction Concept 3.2 Transaction Properties 3.3 Transaction States 3.4 Concurrent Execution 3.5 Serializability 3.5.1 Conflict Serializability 3.5.2 View Serializability 3.6 Recoverability	<b>10</b>	1,2,3

	3.6.1 Recoverable Schedule 3.6.2 Cascadless Schedule		
<b>Unit 4</b>	<b>Concurrency Control</b> 4.1 Lock Based Protocol 4.1.1 Locks 4.1.2 Granting of Locks 4.1.3 Two Phase Locking Protocol 4.2 Timestamp Based Protocol 4.2.1 Timestamp 4.2.2 Timestamp ordering protocol 4.2.3 Thomas's Write Rule 4.3 Validation Based Protocol 4.4 Deadlock Handling 4.4.1 Deadlock Prevention 4.4.2 Deadlock Detection 4.4.3 Deadlock Recovery	<b>8</b>	1,2,3
<b>Unit 5</b>	<b>Recovery System</b> 5.1 Failure Classification 5.1.1 Transaction Failure 5.1.2 System Crash 5.1.3 Disk Failure 5.2 Storage Structures 5.2.1 Storage Types 5.2.2 Data Access 5.3 Recovery & Atomicity 5.3.1 Log based Recovery 5.3.2 Deferred Database Modification 5.3.3 Immediate Database Modification 5.3.4 Checkpoints 5.4 Recovery with Concurrent Transaction 5.4.1 Transaction Rollback 5.4.2 Restart Recovery 5.5 Remote Backup System	<b>8</b>	1,2,3
<b>Total No. of Lectures</b>		<b>48</b>	

**Recommended Books :**

- 1) Database System Concepts 5th Edition - Silberschatz, Korth, Sudershan.
- 2) Database Management System - Bipin Desai
- 3) An Introduction to Database Systems Eighth Edition C. J.Date, A.Kannan,  
S.Swamynathan
- 4) SQL/PLSQL the programming language of oracle - Ivan Bayross

## B.C.A. Semester III

**Subject Name -: Data Structure Using C**

**Course Code -:302**

### **Objective:-**

1. To understand different methods of organising large amounts of data
2. To efficiently implement different data structure
3. To efficiently implement solution for different problems
4. To get more knowledge on C programming language

<b>Unit</b>	<b>Topic</b>	<b>No. of Lectures</b>	<b>Reference Books</b>
<b>Unit 1</b>	<b>Basic Concept and Introduction to Data Structure</b> 1.1 Pointers and dynamic memory allocation 1.2 Algorithm-Definition and characteristics 1.3 Algorithm Analysis -Space Complexity -Time Complexity -Asymptotic Notation <b>Introduction to Data structure</b> 1.5 Types of Data structure 1.6 Abstract Data Types (ADT) <b>Introduction to Arrays and Structure</b> 1.7 Types of array and Representation of array 1.8 Polynomial - Polynomial Representation - Evaluation of Polynomial - Addition of Polynomial 1.9 Self Referential Structure	<b>9</b>	1,2
<b>Unit 2</b>	<b>Searching and Sorting Techniques</b>	<b>9</b>	1,2,3



	<p>2.1 Linear Search</p> <p>2.2 Binary Search(Recursive , Non-Recursive)</p> <p>2.3 Bubble Sort</p> <p>2.4 Insertion Sort</p> <p>2.5 Selection Sort</p> <p>2.6 Quick Sort</p> <p>2.7 Heap Sort (No Implementation)</p> <p>2.8 Merge Sort</p> <p>2.9 Analysis of all Sorting Techniques</p>		
<b>Unit 3</b>	<p><b>Linked List</b></p> <p>3.1 Introduction</p> <p>3.2 Static &amp; Dynamic Representation</p> <p>3.3 Types of linked List</p> <ul style="list-style-type: none"> <li>- Singly Linked list(All type of operation)</li> <li>- Doubly Linked list (Create , Display)</li> <li>- Circularly Singly Linked list (Create, Display)</li> </ul> <p>3.4 Circularly Doubly Linked list (Create, Display)</p>	<b>10</b>	1,3
<b>Unit 4</b>	<p><b>Stack and Queue</b></p> <p>4.1 Introduction stack</p> <p>4.2 Static and Dynamic Representation</p> <p>4.3 Primitive Operations on stack</p> <p>4.4 Application of Stack</p> <p>4.5 Evaluation of postfix and prefix expression</p> <p>4.6 Conversion of expressions- Infix to prefix &amp; Infix to postfix</p> <p><b>Queue</b></p> <p>4.7 Introduction queue</p> <p>4.8 Static and Dynamic Representation</p> <p>4.9 Primitive Operations on Queue</p>	<b>9</b>	1,2,3

	4.10 Application of Queue 4.11 Type of Queue Circular Queue De Queue Priority Queue		
<b>Unit 5</b>	<b>Trees</b> 5.1 Introduction & Definitions 5.2 Terminology 5.3 Static and Dynamic Representation 5.4 Types of tree 5.5 Operations on Binary Tree & Binary Search Tree 5.6 Tree Traversal Inorder, Preorder, Postorder (Recursive & Iterative) 5.7. AVL Tree	<b>7</b>	1,2
<b>Unit 6</b>	<b>Graphs</b> 6.1 Representation -Adjacency Matrix -List 6.2 In degree , out degree of graph 6.3 Graph operation DFS , BFS 6.4 Spanning Tree	<b>4</b>	1,2,3
	<b>Total No. of Lectures</b>	<b>48</b>	

**Recommended Books:-**

1. Fundamentals of data structures – Ellis Horowitz and Sartaj Sahni
2. Data Structure Using C - Radhakrishanan and Shrivastav.
3. Data Structure Using C and C++ - Rajesh K. Shukla ,Wiley -India
4. Data Structures Files and Algorithms – Abhay K. Abhyankar
5. Data Structures and Algorithms – Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman (Pearson Education)

### B.C.A.Semester III

**Subject Name :- Introduction to Operating System**  
**Course Code :- 303**

**Objective :-**

1. To know system programming
2. To know services provided by operating system
3. To know the Scheduling concepts

<b>Unit</b>	<b>Topic</b>	<b>No. of Lect.</b>	<b>Reference Books</b>
<b>Unit 1</b>	<b>Introduction to Operating System</b> 1.1 What is operating system 1.2 Computer system architecture 1.3 Services provided by OS 1.4 Types of OS	02	Book 1,2
<b>Unit 2</b>	<b>System Structure</b> 2.1 User operating system Interface 2.2 System Calls 2.3 Process or job control 2.4 Device Management 2.5 File Management 2.6 System Program 2.7 Operating System Structure	02	Book 2
<b>Unit 3</b>	<b>Process Management</b> 3.1 What is Process 3.2 Process State 3.3 Process Control Block 3.4 Context Switch 3.5 Operation on Process Process Creation Process Termination	03	Book 2
<b>Unit 4</b>	<b>CPU Scheduling</b> 4.1 What is scheduling 4.2 Scheduling Concepts 4.2.1 CPU- I/O Burst Cycle 4.2.2 CPU Scheduler 4.2.3 Preemptive and Non-preemptive scheduling 4.2.4 Dispatcher 4.3 Scheduling criteria (Terminologies used in scheduling) 4.4 Scheduling Algorithms 4.4.1 FCFS 4.4.2 SJF ( Preemptive & non-preemptive) 4.4.3 Priority Scheduling (Preemptive & Non-preemptive) 4.4.4 Round Robin Scheduling 4.5 Multilevel Queues	08	Book 2

	4.6 Multilevel Feedback queues		
<b>Unit 5</b>	<b>Process Synchronization</b> 5.1 Introduction 5.2 Critical section problem 5.3 Semaphores 5.3.1 Concept 5.3.2 Implementation 5.3.3 Deadlock & Starvation 5.3.4 Binary Semaphores 5.4 Critical Sections 5.5 Classical Problems of synchronization 5.6 Bounded buffer problem 5.7 Readers & writers problem 5.8 Dining Philosophers problem	06	Book 2
<b>Unit 6</b>	<b>Deadlock</b> 6.1 Introduction 6.2 Deadlock Characterization 6.3 Necessary Condition 6.4 Resource allocation graph 6.5 Deadlock Prevention 6.6 Deadlock Avoidance Safe State Resource allocation graph algorithm Bankers algorithm 6.7 Deadlock Detection 6.8 Recovery from deadlock Process Termination Resource Preemption	07	Book 2
<b>Unit 7</b>	<b>Memory Management</b> 7.1 Introduction to memory management 7.2 Address Binding 7.3 Dynamic Loading 7.4 Dynamic Linking 7.5 Overlays 7.6 Logical vs. physical addresses 7.7 Swapping 7.8 Contiguous memory allocation 7.8.1 Single Partition Allocation 7.8.2 Multiple Partition Allocation 7.8.3 External and Internal Fragmentation 7.9 Paging 7.10 Segmentation 7.11 Segmentation with paging 7.12 Virtual memory 7.13 Demand paging 7.14 Page replacement algorithms FIFO MRU	08	Book 2

	LRU LRU approximation using reference bit MFU LFU Second Chance algorithm Optimal replacement		
<b>Unit 8</b>	<b>File System</b> 8.1 Introduction & File concepts (file attributes, Operations on files) 8.2 Access methods Sequential access Direct access 8.3 File structure Allocation methods Contiguous allocation Linked Allocation Indexed Allocation 8.4 Free Space Management Bit Vector Linked List Grouping Counting	07	Book 2
<b>Unit 9</b>	<b>I/O System</b> 9.1 Introduction 9.2 I/O Hardware 9.3 Application of I/O Interface 9.4 Kernel I/O Subsystem 9.5 Disk Scheduling FCFS Shortest Seek time first SCAN C- SCAN C- Look	05	Book 2
	<b>Total No. of Lectures</b>	<b>48</b>	

### Recommended Books

1. System Programming and Operating System – D. M. Dhamdhare
2. Operating System Concepts – Silberschatz, Galvin, Gagne

**BCA Semester-III**  
**Subject Name: - Business Mathematics**  
**Course Code: - 304**

<b>Unit No</b>	<b>Topic</b>	<b>No of Lectures</b>
<b>Unit 1</b>	<b>Ratio, Proportion and Percentage</b> Ratio- Definition, Continued Ratio, Inverse Ratio, Proportion, Continued Proportion, Direct Proportion, Inverse Proportion, Variation, Inverse Variation, Joint Variation, Percentage- Meaning and Computations of Percentages.	<b>08</b>
<b>Unit 2</b>	<b>Profit And Loss</b> Terms and Formulae, Trade discount, Cash discount, Problems involving cost price, Selling Price, Trade discount and Cash Discount. Introduction to Commission and brokerage, Problems on Commission and brokerage.	<b>08</b>
<b>Unit 3</b>	<b>Interest</b> Simple Interest, Compound interest ( reducing balance & Flat Interest rate of interest), Equated Monthly Installments(EMI), Problems	<b>06</b>
<b>Unit 4</b>	<b>Matrices And Determinants (upto order 3 only )</b> Multivariable data, Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Ad joint of a Matrix, Inverse of a Matrix via ad joint Matrix, Homogeneous System of Linear equations, Condition for Uniqueness for the homogeneous system, Solution of Non-homogeneous System of Linear equations (not more than three variables). Condition for existence and uniqueness of solution, Solution using inverse of the coefficient matrix, Problems.	<b>14</b>
<b>Unit 5</b>	<b>Linear Programming problem (L.P.P.)</b> Meaning of LPP, Formulation of LPP, and solution by graphical methods.	<b>04</b>
<b>Unit 6</b>	<b>Transportation problem (T.P.)</b> Statement and meaning of T.P. methods of finding initial basic feasible solution by North West corner Rule, Matrix Minimum method and Vogel's approximation method. Simple numerical problems (concept of degeneracy is not expected).	<b>08</b>
	<b>Total no of lectures</b>	<b>48</b>

**Reference Books:**

- 1) Business Mathematics by Dr. Amarnath Dikshit & Dr. Jinendra Kumar Jain.
- 2) Business Mathematics by V. K. Kapoor - Sultan chand & sons, Delhi
- 3) Business Mathematics by Bari - New Literature publishing company, Mumbai
- 4) Operations Research by Dr. S. D. Sharma – Sultan Chand & Sons.
- 5) Operations Research by Dr. J. K. Sharma – Sultan Chand & Sons.

## B.C.A. Semester III

**Subject Name:- Software Engineering**  
**Course Code:- 305**

**Course Objective:** This course enables students to understand system concepts and its application in Software development.

Unit	Name of the Topic	Number of lecturer	Reference Book
<b>Unit 1</b>	<b>Introduction to System Concepts</b> 1.1 Definition , Elements of System 1.2 Characteristics of System 1.3 Types of System 1.4 System Concepts	6	Book1
<b>Unit 2</b>	<b>Requirement Analysis</b> 2.1 Definition of System Analysis 2.2 Requirement Anticipation 2.3 Knowledge and Qualities of System Analyst 2.4 Role of a System Analyst 2.5 Feasibility Study And It's Types 2.6 Fact Gathering Techniques 2.7 SRS(System Requirement Specification)	8	Book1
<b>Unit 3</b>	<b>Introduction to Software Engineering</b> 3.1 Definition Need for software Engineering 3.2 Software Characteristics 3.3 Software Qualities ( McCall's Quality Factors)	6	Book2
<b>Unit 4</b>	<b>Software Development Methodologies</b> 4.1 SDLC (System Development Life Cycle) 4.2 Waterfall Model 4.3 Spiral Model 4.4 Prototyping Model 4.5 RAD MODEL	6	Book2
<b>Unit 5</b>	<b>Analysis and Design Tools</b> 5.1 Entity-Relationship Diagrams 5.2 Decision Tree and Decision Table 5.3 Data Flow Diagrams (DFD) 5.4 Data Dictionary 5.4.1 Elements of DD 5.4.2 Advantage of DD 5.5 Pseudo code 5.6 Input And Output Design 5.7 CASE STUDIES (Based on Above Topic)	10	Book1, Book2



<b>Unit 6</b>	<b>Structured System Design</b> 6.1 Modules Concepts and Types of Modules 6.2 Structured Chart 6.3 Qualities of Good Design 6.3.1 Coupling, Types of Coupling 6.3.2 Cohesion, Types of Cohesion	6	Book1 and Book2
<b>Unit 7</b>	<b>Software Testing</b> 7.1 Definition, Test characteristics 7.2 Types of testing 7.2.1 Black-Box Testing 7.2.2 White-Box Testing 7.2.3 Unit testing 7.2.4 Integration testing 7.3 Validation 7.4 Verification	6	Book1 and Book2
	<b>Total No. of Lectures</b>	<b>48</b>	

**Recommended Books :**

- 1) Software Engineering - Roger s. Pressman.
- 2) SADSE (System Analysis Design) - Prof. Khalkar and Prof. Parthasarathy.

**B.C.A. Semester IV**  
**Subject Name:- Object Oriented Programming Using C++**  
**Course Code:- 401**

**Objectives:**

1. Acquire an understanding of basic object-oriented concepts and the issues involved in effective class design.
2. Enables student to write C++ programs that use: object-oriented concepts such as information hiding, constructors, destructors, inheritance.

Unit	Topic	No. of Lectures	Ref. Book
<b>Unit 1</b>	<b>Introduction to C++</b> 1.1 Basic concepts of OOP, benefits, applications of OOP 1.2 A simple C++ program 1.3 Structure of C++ program 1.4 Creating a source file, compiling and Linking	2	1
<b>Unit 2</b>	<b>Tokens, Expressions and Control structures</b> 2.1 Introduction 2.2 Tokens, keywords, Identifiers and constants 2.3 Data types - Basic, User defined and Derived 2.4 Symbolic constant 2.5 Type Compatibility 2.6 Variables - Declaration and Dynamic initialization 2.7 Reference variable 2.8 Operators in C++ 2.8.1 Scope resolution operator 2.8.2.Member Referencing operators 2.8.3Memory management operators 2.8.4 Manipulators 2.8.5 Type cast operators 2.9 Expression and their types 2.10 Special Assignment Expressions 2.11 Implicit conversions 2.12 Operator overloading introduction 2.13 Operator precedence 2.14 Control structures – if-else, do-while, for , switch	3	1,2,3
<b>Unit 3</b>	<b>Functions in C++</b> 3.1 Introduction 3.2 The main function 3.3 Function prototyping 3.4 Call by reference 3.5 Return by reference 3.6 Inline function – Making an outside function Inline 3.7 Arguments - default, constant 3.8 Math library functions	5	1,2,3

<b>Unit 4</b>	<b>Classes and Objects</b> 4.1 Introduction 4.2 Creating a class and objects 4.3 Defining member functions inside and outside class definition 4.4 Nesting of member functions 4.5 Private member functions 4.6 Arrays within a class 4.7 Memory allocation of objects 4.8 Static data members and static member functions 4.9 Array of objects 4.10 Objects as function arguments 4.11 Friend functions 4.12 Returning objects 4.13 Constructors 4.14 Types of constructor 4.15 Destructors	10	1,2
<b>Unit 5</b>	<b>Inheritance</b> 5.1 Introduction 5.2 Base class and derived class examples 5.3 Types of Inheritance 5.4 Virtual base class 5.5 Abstract class 5.6 Constructors in derived class	9	1,2
<b>Unit 6</b>	<b>Polymorphism</b> 6.1 Compile Time Polymorphism 6.1.1 Function overloading 6.1.2 Operator Overloading Introduction 6.1.3 Overloading unary and binary operator 6.1.4 Overloading using friend function 6.1.5 Overloading insertion and extraction operators 6.1.6 String manipulation using operator overloading 6.2 Runtime Polymorphism 6.2.1 this Pointer, pointers to objects, pointer to derived classes 6.2.2 Virtual functions and pure virtual functions	8	1,2
<b>Unit 7</b>	<b>Managing console I/O operations</b> 7.1 Introduction 7.2 C++ streams and C++ stream classes 7.3 Unformatted I/O operations 7.4 Formatted console I/O operations 7.5 Managing output with manipulators	3	1,2
<b>Unit 8</b>	<b>Working with Files</b> 8.1 Classes for File Stream operations 8.2 File operations - Opening, Closing and updating 8.3 Error handling during File operations 8.4 Command Line arguments	5	1
<b>Unit 9</b>	<b>Templates</b> 9.1 Introduction 9.2 Class Templates	3	1

	9.3 Function Templates 9.4 Exception Handling(Introduction)		
	<b>Total No. of Lectures</b>	<b>48</b>	

**Recommended Books :**

- 1) Object oriented programming with C++ - by E Balagurusamy
- 2) Object Oriented Programming with C++ by Robert Lafore
- 3) Object Oriented Programming in C++ by Dr. G. T. Thampi, Dr. S. S. Mantha,  
DreamTech Press

## B.C.A. Semester IV

**Subject Name: Programming in Visual Basic**  
**Course Code: 402**

### Objectives:-

To learn properties and events, methods of controls and how to handle events of different controls. To understand the use of active controls and how to design VB application  
To learn connectivity between VB and databases.

Unit No	Topic	No. of Lectures	Ref .Book
Unit 1	<b><u>Getting started with V. B.</u></b> 1.1 Object Oriented Concept 1.2 Event Driven Programming Language 1.3 Working with properties 1.3.1 Studying the Events of a Form 1.3.2 Working code for events 1.3.3 Planning the Design	4	1,3
Unit 2	<b><u>Constants, Variables , Operators, Control Structure, Looping &amp; Array</u></b> 2.1 Constant 2.2 Data Types 2.2.1 Number , long , Boolean , doubles , variant, String 2.2.2 User defined data types 2.3 Variables 2.4 Operators 2.5 Control Structures 2.5.1 If 2.5.2 If...Else 2.5.3 Nested If...Else 2.5.4 Select Case 2.6 Looping 2.6.1 Do Loop 2.6.2 While Loop 2.6.3 Until Loop 2.6.4 For Loop 2.6.5 With Statement 2.7 Array 2.7.1 Single Dimensional Array 2.7.2 Multidimensional Array 2.7.3 Control Array 2.8 Functions(Built in and user defined)	10	1,2,3
Unit 3	<b><u>Working with Controls</u></b> 4.1 Adding controls on form 4.2 Working with Properties and Methods of each Controls 4.3 Creating an application 4.4 Creating MDI application	10	

	4.4.1 Working with Multiple Forms 4.4.2 Loading, Showing & Hiding Forms 4.4.3 Setting the Startup form 4.4.4 Creating forms in Code 4.4.5 Using the MDI 4.4.6 Arranging MDI Child Window 4.4.7 Opening new MDI child window 4.4.8 Creating Properties in a form 4.4.9 Creating a method in a form		<b>2,3</b>
<b>Unit 4</b>	<b><u>Working with ActiveX Controls &amp; Menus</u></b> 4.1 Creating Status Bar For your program 4.2 Working with Progress Bar 4.3 Working with Toolbar 4.4 Setting up the Image List Controls 4.4.1 Adding and Deleting Images with code 4.4.2 Study of Different Dialog Boxes 4.5 Menus 4.5.1 Creating new Menu Item 4.5.2 Modifying & Deleting Menu Item 4.5.3 Adding Access Characters 4.5.4 Adding Shortcut Keys 4.5.5 Creating Sub Menus 4.6 Pop-up Menus 4.6.1 Creating pop-up menu 4.6.2 Displaying pop-up menu 4.7 Adding & Deleting Menus At Run-time 4.8 Adding Menu Items for MDI Child Form	<b>12</b>	<b>1,2,3</b>
<b>Unit 5</b>	<b><u>Working With Database</u></b> 5.1 Data Control 5.1.1 Studying the Properties and methods of Data Control 5.1.2 Connectivity with MS-Access 5.1.3 Operations of database through coding 5.2 ADO Data Control 5.2.1 Advantages of ADODC over DC 5.2.2 Studying the properties and Methods of ADODC 5.2.3 Connectivity with MS-Access 5.2.4 Connectivity with Oracle 5.2.5 Report Generation 5.3 Developing ADO application through ADODC and coding 5.4 Report Generation	<b>12</b>	<b>2,3</b>
	<b>Total No. of Lectures</b>	<b>48</b>	

**Recommended Books :**

- 1) Mastering Visual Basic
- 2) Visual Basic Black Book
- 3) Learn VB in 21 days

## B. C. A. Semester IV

**Subject Name : Computer Networking**

**Course Code :- 403**

### **Objective :-**

1. To know about computer network.
2. To understand different topologies used in networking
3. To learn different types of network.
4. To understanding the use of connecting device used in network.

<b>Unit No.</b>	<b>Topic</b>	<b>No. of Lectures</b>	<b>Ref. Books</b>
<b>Unit 1</b>	<b>Basics of Computer Networks</b> 1.1 Computer Network 1.1.1 Definition 1.1.2 Goals 1.1.3 Applications 1.1.4 Structure 1.1.5 Components 1.2 Topology 1.2.1 Bus 1.2.2 Star 1.2.3 Ring 1.2.4 Mesh 1.3 Types of Networks 1.3.1 LAN, MAN, WAN, Internet 1.3.2 Broadcast & Point-To-Point Networks 1.4 Communication Types 1.4.1 Serial 1.4.2 Parallel 1.5 Modes of Communication : 1.5.1 Simplex 1.5.2 Half Duplex 1.5.3 Full Duplex 1.6 Server Based LANs & Peer-to-Peer LANs 1.6.1 Comparison of both 1.7 Protocols and Standards	8	1,2,3
<b>Unit 2</b>	<b>Network Models</b> 2.1 Design issues of the layer 2.2 Protocol Hierarchy 2.3 ISO-OSI Reference Model : 2.3.1 Layers in the OSI Model 2.3.2 Functions of each layer 2.4 Terminology 2.4.1 SAP 2.4.2 Connection Oriented services 2.4.3 connectionless services	8	1,2,3

	<ul style="list-style-type: none"> <li>2.4.4 Peer Entities</li> <li>2.5 Internet Model (TCP/IP)</li> <li>2.6 Comparison of ISO-OSI &amp; TCP/IP Model</li> <li>2.7 Addressing <ul style="list-style-type: none"> <li>2.7.1 Physical Addresses</li> <li>2.7.2 Logical Addresses</li> <li>2.7.3 Port Addresses</li> </ul> </li> <li>2.8 IP Addressing <ul style="list-style-type: none"> <li>2.8.1 Classful addressing</li> <li>2.8.2 Classless addressing</li> </ul> </li> </ul>		
<b>Unit 3</b>	<p><b>Transmission Media</b></p> <ul style="list-style-type: none"> <li>3.1 Guided Media(Wired) : <ul style="list-style-type: none"> <li>3.1.1 Coaxial Cable:- Physical Structure, Standards, BNC Connector, Applications</li> <li>3.1.2 Twisted Pair :- Physical Structure, UTP vs STP, Connectors, Applications</li> <li>3.1.3 Fiber Optics Cable :- Physical Structure, Propagation Modes (Single Mode &amp; Multimode ), Connectors, Applications</li> </ul> </li> <li>3.2 Unguided Media(Wireless) <ul style="list-style-type: none"> <li>3.2.1 Electromagnetic Spectrum For Wireless Communication</li> <li>3.2.2 Propagation Methods <ul style="list-style-type: none"> <li>3.2.2.1 Ground,</li> <li>3.2.2.2 Sky,</li> <li>3.2.2.3 Line-Of-Sight</li> </ul> </li> <li>3.3.3 Wireless Transmission <ul style="list-style-type: none"> <li>3.3.3.1 Radio Waves</li> <li>3.3.3.2 Infra-Red,</li> <li>3.3.3.3 Micro-Wave</li> </ul> </li> </ul> </li> </ul>	10	1,2,3
<b>Unit 4</b>	<p><b>Wired and Wirless LANs</b></p> <ul style="list-style-type: none"> <li>4.1 IEEE Standards</li> <li>4.2 Standard Ethernet <ul style="list-style-type: none"> <li>4.2.1 MAC Sublayer</li> <li>4.2.2 Physical layer</li> </ul> </li> <li>4.3 Fast Ethernet <ul style="list-style-type: none"> <li>4.3.1 MAC Sublayer</li> <li>4.3.2 Physical layer</li> </ul> </li> <li>4.4 Gigabit Ethernet <ul style="list-style-type: none"> <li>4.4.1 MAC Sublayer</li> <li>4.4.2 Physical layer</li> </ul> </li> <li>4.5 Network Interface Cards(NIC) <ul style="list-style-type: none"> <li>4.5.1 Components of NIC</li> <li>4.5.2 Functions of NIC</li> <li>4.5.3 Types of NIC</li> </ul> </li> <li>4.6 Wireless LAN <ul style="list-style-type: none"> <li>4.6.1 IEEE802.11 Architecture</li> <li>4.6.2 MAC Sub layer</li> <li>4.6.3 Frame Format</li> </ul> </li> </ul>	10	1,2,3



	4.6.4 Frame Types 4.6.5 Addressing Mechanism 4.6.6 Bluetooth (Architecture, Piconet and Scatternet, Applications)		
<b>Unit 5</b>	<b>Network Connectivity Devices</b> 5.1 Categories of Connectivity Devices 5.1.1 Passive & Active Hubs 5.1.2 Repeaters 5.1.3 Bridges 5.1.3.1 Transparent Bridges(Loop Problem, Spanning Tree) 5.1.3.2 Source Routing Bridges 5.1.4 Switches 5.1.5 Router 5.1.6 Gateways 5.2 Network Security Devices 5.2.1 Firewalls 5.2.1.1 Packet-Filter firewall 5.2.1.2 Proxy firewall	6	1,2,3
<b>Unit 6</b>	<b>Internet Basics</b> 6.1 Concept of Intranet & Extranet 6.2 Internet Information Server(IIS) 6.3 Web Server 6.4 World Wide Web( WWW ) 6.4.1 Architecture, 6.4.2 Web Documents :- static, dynamic and active documents 6.5 Search Engines 6.6 Internet Service Providers(ISP) 6.7 HTTP 6.7.1 HTTP Transaction 6.7.2 Persistent and non persistent connection	6	2,3
<b>Total No. of Lectures</b>		<b>48</b>	

**Recommended Books :**

- 1) Computer Networks - Andrew Tanenbaum (III Edition)
- 2) Data Communications & Networking - Behrouz Ferouzan (III Edition)
- 3) Complete Guide to Networking - Peter Norton

## B.C.A. Semester IV

**Subject Name :- Enterprise Resource Planning and Management.**

**Course Code :-404**

**Objectives :-**

1. To know what is ERP.
2. To learn different ERP technologies.

<b>Unit No.</b>	<b>Topic</b>	<b>No. of Lect.</b>	<b>Reference Books</b>
<b>Unit 1</b>	<b>ERP : An Overview</b>  1.1. What is ERP. 1.2. Reasons for Growth Of ERP 1.3. Problem areas in ERP implementations. 1.4. The future of ERP 1.5. Characteristics and features of ERP 1.6. Benefits of ERP.	<b>04</b>	<b>1,2</b>
<b>Unit 2</b>	<b>Enterprise Modeling and Integration for ERP</b>  2.1.Enterprise-An overview 2.2.What is enterprise 2.3.Integrated Management Information 2.4.The role of enterprise 2.5.Business modeling 2.6.Integrated Data Model 2.7.Role of Common/Shared Enterprise Database 2.8.Linkages of the Enterprise 2.8.1.Establishing Customer-Enterprise Link 2.8.2.Establishing Vendor-Enterprise Link 2.8.3.Establishing Links within the Enterprise 2.8.4.Establishing Links with Environment 2.9. Scope of Enterprise system 2.10.Generic Model of ERP System 2.11.Client/Server Architecture and Enterprise – wide Computing 2.11.1. Characteristics of client/Server Architecture 2.11.2. Different Components of ERP Client/Server Architecture	<b>08</b>	<b>1,2</b>
<b>Unit 3</b>	<b>ERP And related Technologies</b>  3.1.BPR(Business Process reengineering) 3.1.1.Definition 3.2.BPR –The different phases 3.3.Enterprise Redesign Principles 3.4.BPR and IT 3.5.Data Warehousing 3.6.Data Warehouse Components	<b>08</b>	<b>1,2</b>

	<p>3.7. Structure and Uses of Data Warehouse</p> <p>3.8. Data Mining</p> <p>3.9. What Is Data Mining</p> <p>3.10. Data Mining Process</p> <p>3.11. Advantages and Technologies Used In Data Mining</p> <p>3.12. OLAP</p> <p>3.13. Supply Chain Management</p> <p>    3.13.1. Definition</p> <p>    3.13.2. Stevan's Model</p> <p>    3.13.3. Benefits</p> <p>    3.13.4. ERP Vs SCM</p> <p>3.14. CRM</p>		
<b>Unit 4</b>	<p><b>ERP Implementation</b></p> <p>4.1. Evolution</p> <p>4.2. Evolution of ERP.</p> <p>4.3. Evolution of Packaged Software Solutions.</p> <p>4.4. The Obstacles in ERP implementation.</p> <p>4.5. ERP Implementation Lifecycle (Different Phases).</p> <p>4.6. Implementation Methodology.</p> <p>4.7. ERP Implementation-The Hidden Costs.</p> <p>4.8. In-house Implementation-Pros and Cons</p> <p>4.9. Vendors and role of vendors for ERP</p> <p>4.10. Consultants and role of consultants for ERP.</p>	<b>08</b>	<b>1,2</b>
<b>Unit 5</b>	<p><b>Technologies In ERP System</b></p> <p>5.1. Introduction</p> <p>5.2. Electronic Data Interchange(EDI)</p> <p>    5.2.1. Use of EDI</p> <p>    5.2.2. Evolution of EDI</p> <p>    5.2.3. Benefits of the EDI</p> <p>    5.2.4. EDI Standards</p> <p>    5.2.5. EDI Services</p> <p>    5.2.6. EDI Components</p> <p>    5.2.7. EDI Administration</p> <p>5.3. IDoc Application</p> <p>5.4. EDI Integration</p> <p>5.5. ALE Integration</p> <p>5.6. Internet Integration</p> <p>5.7. OCR Integration</p>	<b>07</b>	<b>2</b>
<b>Unit 6</b>	<p><b>The ERP Domain</b></p> <p>6.1. Vendors in the ERP Market.</p> <p>6.2. SAP's Markets</p> <p>    6.2.1. SAP Architecture And Integration</p> <p>    6.2.2. Scalability of SAP</p> <p>    6.2.3. SAP Business Structure</p> <p>    6.2.4. Common SAP Installation</p> <p>    6.2.5. SAP R/3 System</p>	<b>07</b>	<b>1,2</b>

	6.2.6.SAP Tools 6.3.Pepole Soft. 6.4.Jd Edwards 6.5.Oracle		
<b>Unit 7</b>	<b>ERP Present and Future</b> 7.1. Limitations of ERP 7.2. EIA(Enterprise Integration Application) 7.3. EIA Products 7.4. Two Flavors of EIA and Messaging 7.5. ERP And E-Commerce 7.6. ERP and Internet. 7.7. Future Directions in ERP.	<b>06</b>	<b>1</b>
	<b>Total No. of Lectures</b>	<b>48</b>	

### **Recommended Books**

1. ERP : Demystified – Alexis Leon (Tata McGraw Hill)
2. ERP – Ravi Shankar and S. Jaiswal (Galgotia)

## B.C.A .Semester IV

**Subject: - Human Resource Management**

**Course Code:- 405**

**Objective:** To acquaint the students with the Human Resource Management its different functions in an organization and the Human Resource Processes that are concerned with planning, motivating and developing suitable employees for the benefit of the organization.

<b>Unit No.</b>	<b>Topic</b>	<b>No. of Lect.</b>	<b>Reference Books</b>
<b>Unit I</b>	<b>Introduction To HRM</b> Definition and Concept of HRM and Personnel Management, Difference between PM and HRM, Importance of HRM, activities and functions of HRM, Challenges before HRM,HRD,HRP, Concept of recruitment –sources of recruitment. Concept of Selection –selection Procedure, Induction and placement	12	1,2,3,4
<b>Unit II</b>	<b>Performance Appraisal, Training and development</b> Meaning and Definition-need- objective –importance of training, training method –evaluation of training program, Concept and Objective Performance Appraisal-Process of performance appraisal method –uses and limitation of performance appraisal, Promotion and demotion policy, Transfer Policy.	12	1,2
<b>Unit III</b>	<b>Wages and Salary Administration</b> Method of wage payment –Employee Remuneration factors determining the level of remuneration-profit sharing –fringe benefit and employee services.	8	3,4
<b>Unit IV</b>	<b>Grievance and discipline</b> Meaning, Definition and nature of Grievance .Grievance procedure-Grievance Machinery. Definition of Discipline-aim and objective of discipline Principle of discipline.	8	1,2,3
<b>Unit V</b>	<b>The E-HR</b> Nature of E-HRM,E-HR activity, E-Recruitment , E-Selection, E-learning ,E-Compensation	8	2,4
	<b>Total No. of Lectures</b>	48	

**Recommended Book:**

- 1) P. C. Perdeshi – Human Resources Management.
- 2) K. Ashwathappa –Human Resources Management.
- 3) C. B. Mamoria – Personnel Management.
- 4) A. M. Sharma – Personnel and Human Resource Management.

## B. C. A. (Semester V)

### 501 : Java Programming

#### Objectives:-

1. To learn the basic concept of Java Programming.
2. To understand how to use programming in day to day applications.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Introduction to Java</b>  1.1 Features of java 1.2 JDK Environment & tools like(java, javac, appletviewer, javadoc, jdb) 1.3 OOPs Concepts Class, Abstraction , Encapsulation, Inheritance, Polymorphism 1.4 Difference between C++ and JAVA 1.5 Structure of java program 1.6 Data types ,Variables ,Operators , Keywords ,Naming Convention 1.7 Decision Making (if, switch), Looping(for, while) 1.8 Type Casting 1.9 Array Creating an array Types of Array - One Dimensional arrays - Two Dimensional array 1.10 String - Arrays , Methods. - StringBuffer class	8	1,2
2	<b>Classes and Objects</b>  2.1 Creating Classes and objects 2.2 Memory allocation for objects 2.3 Constructor 2.4 Implementation of Inheritance Simple, Multilevel, 2.5 Interfaces	10	1,2

	<p>2.6 Abstract classes and methods</p> <p>2.7 Implementation of Polymorphism</p> <p>2.8 Method Overloading, Method Overriding</p> <p>2.9 Nested and Inner classes.</p> <p>2.10 Modifiers and Access Control</p> <p>2.11 Packages  Packages Concept  Creating user defined packages</p> <p>2.12 Java Built in packages  java.lang-&gt;math  java.util-&gt;Random, Date, Hashtable</p> <p>2.13 Wrapper classes</p>		
3	<p><b>Collection</b></p> <p>3.1 Collection Framework.</p> <p>3.1.1 Interfaces</p> <ul style="list-style-type: none"> <li>- Collection</li> <li>- List</li> <li>- Set</li> <li>- SortedSet</li> <li>- Enumeration</li> <li>- Iterator</li> <li>- ListIterator</li> </ul> <p>3.1.2. Classes</p> <ul style="list-style-type: none"> <li>- LinkedList</li> <li>- ArrayList</li> <li>- Vector</li> <li>- HashSet</li> <li>- TreeSet</li> <li>- Hashtable</li> </ul> <p>3.2 Working with maps</p> <p>3.2.1 Map interface</p> <p>3.2.2 Map classes</p> <ul style="list-style-type: none"> <li>- HashMap</li> <li>- TreeMap</li> </ul>	6	1,2



4	<p><b>File and Exception Handling</b></p> <p><b>Exception</b></p> <p>4.1 Exception types</p> <p>4.2 Using try catch and multiple catch Nested try, throw , throws and finally</p> <p>4.3 Creating user defined Exceptions</p> <p><b>File Handling</b></p> <p>4.4 Stream ByteStream Classes CharacterStream Classes</p> <p>4.5 File IO basics</p> <p>4.6 File operations Creating file Reading file(character, byte ) Writing file (character, byte )</p>	8	1,2
5	<p><b>Applet, AWT and Swing Programming</b></p> <p><b>Applet</b></p> <p>5.1 Introduction</p> <p>5.2 Types applet</p> <p>5.3 Applet Life cycle</p> <ul style="list-style-type: none"> <li>- Creating applet</li> <li>- Applet tag</li> </ul> <p>5.4 Applet Classes</p> <ul style="list-style-type: none"> <li>- Color</li> <li>- Graphics</li> <li>- Font</li> </ul> <p><b>AWT</b></p> <p>5.5 Components and container used in AWT</p> <p>5.6 Layout managers</p> <p>5.7 Listeners and Adapter classes</p> <p>5.8 Event Delegation model</p> <p><b>Swing</b></p> <p>5.9 Introduction to Swing Component and Container Classes</p>	12	1,2
	<b>Total no. of Lectures</b>	<b>44</b>	

**Reference Books:**

1. Programming with JAVA - E Balgurusamy
2. The Complete Reference – JAVA Herbert Schildt

## B.C.A. (Semester V)

### 502 : Web Technologies

#### Objectives :-

1. To know & understand concepts of internet programming.
2. To understand how to develop web based applications using PHP.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Web Essentials</b> 1.1 Clients- Servers and Communication 1.2 Internet-Basic ,Internet Protocols(HTTP,FTP,IP) 1.3 World Wide Web(WWW) 1.4 HTTP request message, HTTP response message	3	1
2	<b>Markup Languages</b> 2.1 Introduction to HTML 2.2 Basic HTML Structure 2.3 Common HTML Tags 2.4 Physical and Logical HTML 2.5 Types of Images, client side and server-side Image mapping 2.6 List, Table, Frames 2.7 Embedding Audio, Video 2.8 HTML form and form elements 2.9 Introduction to HTML Front Page 2.10 CSS with HTML	8	1
3	<b>JAVA Script</b> 3.1 Introduction to Java Script 3.2 Identifier & operator, control structure, functions 3.3 Document object model(DOM), 3.4 DOM Objects(window, navigator, history, location) 3.5 Predefined functions, math & string functions 3.6 Array in Java scripts 3.7 Event handling in Java script	6	2

4	<b>Introduction to PHP</b>  4.1 Introduction to PHP 4.2 What does PHP do? 4.3 Lexical structure 4.4 Language basics 4.4.1 Variable, constant, keywords, Data Types 4.4.2 Control Structures 4.4.3 Variables variable 4.4.4 Type casting, Type Juggling 4.4.5 \$_GET, \$_POST, \$_REQUEST Variables	10	3, 4
5	<b>Function and String in PHP</b>  5.1 Defining and calling a function 5.2 Default parameters 5.3 Variable parameters, Missing parameters 5.4 Variable function, Anonymous function 5.5 Types of strings in PHP 5.6 Printing functions 5.7 Encoding and escaping 5.8 Comparing strings 5.9 Manipulating and searching strings	10	3, 4
6	<b>Arrays in PHP</b>  6.1 Indexed Vs Associative arrays 6.2 Identifying elements of an array 6.3 Storing data in arrays 6.4 Multidimensional arrays 6.5 Extracting multiple values 6.6 Converting between arrays and variables 6.7 Traversing arrays 6.8 Sorting 6.9 Action on entire arrays	7	3, 4
<b>Total no. of Lecturers</b>		<b>44</b>	

**Reference Books :**

1. Complete HTML- Thomas Powell
2. HTML and JavaScript – Ivan Bayross
3. Programming PHP - Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
4. Beginning PHP 5 - Wrox publication

## B.C.A. (Semester V)

### 503 : Dot Net Programming

#### Objectives:-

1. This will introduce visual programming and event driven programming practically.
2. This will enhance applications development skill of the student.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Introduction to .Net Framework</b> 1.1 IDE (Integrated Development Environment) 1.2 Event Driven Programming 1.3 . NET Framework 1.4 Architecture of .Net 1.5 Execution Process of .Net Application 1.6 Features of .Net 1.7 Advantages of .Net 1.8 Develop simple .Net Application	8	1,2
2	<b>Introduction to VB.Net</b> 2.1 Basics of VB.Net 2.1.1 Operators 2.1.2 Data Types 2.2 Control Structures 2.2.1 Decision making statements 2.2.2 Loops - For, while, do while etc. 2.3 Exit Statements 2.4 Build Console Applications 2.4.1 Methods - Read(), Readline(), Write(), Writeline() etc. 2.5 Build Windows Applications 2.5.1 Controls - Form, TextBox, Button, Label, CheckBox, Listbox, ComboBox, RadioButton. DateTimePicker, MonthCalender, Timer, Progressbar, Scrollbar, PictureBox, ImageBox, ImageList, TreeView, ListView, Toolbar, StatusBar, Datagridview 2.5.2 Menus and PopUp Menu 2.5.3 Predefined Dialog controls 2.5.4 DialogBox - InputBox(), MessageBox(), MsgBox()	10	1,2,4

3	<b>Object Oriented Programming in VB .Net</b> 3.1 Class and Object 3.2 Properties, methods and events. 3.3 Constructors and Destructors 3.4 Method overloading 3.5 Inheritance 3.5.1 MyBase , MyClass keywords. 3.6 Access modifiers: Public, Private, Protected, Friend. 3.7 Method Overriding. 3.8 Interfaces. 3.9 Polymorphism. 3.10 Exception Handling	6	1,2,4
4	<b>Architecture Of ADO.Net</b> 4.1 Database : Connection, Command, DataAdapter ,DataSet, DataReader, DataTable 4.2 Connection to database with Server Explorer 4.3 Multiple Table Connection 4.4 Data binding with controls like TextBox, ListBox, DataGrid. 4.5 Navigating data source 4.6 DataGridView, DataFormwizard, Data validation	12	3
5.	<b>Crystal Report</b> 5.1 Connection to Database, Table, Queries, Building Report, Modifying Report, Formatting Fields and Object 5.2 Header, Footer, Working with formula fields, Parameter fields, Special fields 5.3 Working with Multiple Tables.	9	6,7
	<b>Total no. Of Lectures</b>	<b>44</b>	

**Reference Books:**

1. Programming Microsoft Visual Basic.NET – Francesco Balena
2. The Complete Reference -Visual Basic .NET – Jeffrey R. Shapiro
3. Murach’s VB.NET database programming with ADO.NET -Anne Prince and Doug Lowe
4. The Visual Basic.NET COACH
5. Visual Basic .NET 2003 in 21 Days. – Steven Holzner, SAMS Publications.
6. Mastering Crystal Report - BPB Publication
7. Crystal Report – The Complete Reference :- Tata McGraw Hill

## B.C.A. (Semester V)

### 504 : Object Oriented Software Engineering

#### Objectives:-

1. To Understand concept of system design using UML.
2. To understand system development through object oriented techniques.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Object Oriented Concepts, Modeling and UML</b> 1.1 What is Object Orientation? (Introduction to class, object, inheritance, polymorphism) 1.2 Model 1.2.1 Introduction of Modeling 1.2.2 Object Oriented Modeling 1.3 Object oriented system development 1.3.1 Function/data methods 1.3.2 Object oriented analysis 1.3.3 Object oriented construction 1.3.4 Object oriented testing 1.4 Identifying the elements of an object model 1.4.1 Identifying classes and objects 1.4.2 Specifying the attributes 1.4.3 Defining operations 1.4.4 Finalizing the object definition 1.5 Introduction to UML 1.6 Overview of UML 1.7 Conceptual Model of UML 1.8 Architecture 1.9 Advantages of UML	08	1, 2, 3
2	<b>Basic and Advanced Structural Modeling</b> 2.1 Classes and Relationship 2.2 Common mechanism 2.3 Diagrams 2.4 Class diagram 2.5 Advanced classes 2.6 Advanced Relationship 2.7 Interface , Types and Roles 2.8 Packages 2.9 Object Diagram	12	1

3	<b>Basic Behavioral and Architectural Modeling</b> 3.1 Use cases, Use Case Diagram 3.2 Interaction Diagram 3.3 Sequence Diagram 3.4 Activity Diagram 3.5 State Chart Diagram 3.6 Collaboration Diagram 3.7 Components Diagram 3.8 Deployment Diagram <b>(Minimum 2 case studies for each diagram)</b>	12	1
4	<b>Object Oriented Analysis</b> 4.1 Iterative Development 4.2 Understanding requirements 4.3 Unified process & UP Phases Inception Elaboration Construction Transition	8	1,3
5	<b>Object Oriented Design</b> 5.1 The Booch Method, The Coad and Yourdon Method and Jacobson and Rumbaugh Method 5.2 Generic components of OO Design model 5.3 System Design process 5.3.1 Partitioning the analysis model 5.3.2 Concurrency and subsystem allocation 5.3.3 Task Management component 5.3.4 Data Management component 5.3.5 Resource Management component 5.3.6 Inter sub-system communication 5.4 Object Design process	4	3
<b>Total no. of Lectures</b>		<b>44</b>	

**Reference Books:**

1. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson.
2. Object Oriented Software Engineering by Ivar Jacobson
3. Software Engineering by Pressman

## B.C.A. (Semester VI)

### 601 : Advanced Web Technologies

**Objectives :-**

1. To know & understand concepts of internet programming.
2. To understand the concepts of XML and AJAX.

Unit No.	Topics	No. of Lectures	Reference Books
1	<b>Introduction to Object Oriented Programming in PHP</b>  1.1 Classes 1.2 Objects 1.3 Introspection 1.4 Serialization 1.5 Inheritance 1.6 Interfaces 1.7 Encapsulation	6	1,2
2	<b>Web Techniques</b>  2.1 Web Variables 2.2 Server information 2.3 Self Processing forms 2.4 Setting response headers 2.5 Maintaining state (Cookies and Sessions)	8	1,2
3	<b>Databases</b>  3.1 Using PHP to access a databases 3.2 Mysql Database functions 3.3 Relational databases and SQL 3.4 PEAR DB basics 3.5 Advanced database techniques 3.6 Sample application	8	1,2



4	<b>XML</b>  4.1 What is XML? 4.2 XML document Structure 4.3 PHP and XML 4.4 XML parser 4.5 The document object model 4.6 The simple XML extension 4.7 Changing a value with simple XML	8	3
5	<b>Web services</b>  5.1 Web services concepts 5.2 WSDL, UDDI 5.3 Introduction to SOAP XML-RPC 5.4 Creating web services 5.5 Calling web services	8	3
6	<b>Ajax</b>  6.1 Understanding java scripts for AJAX 6.2 AJAX web application model 6.3 AJAX –PHP framework 6.4 Performing AJAX validation 6.5 Handling XML data using PHP and AJAX 6.6 Connecting database using PHP and AJAX	6	3
	<b>Total no. of Lectures</b>	<b>44</b>	

**Reference Books :**

1. Programming PHP - Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
2. Beginning PHP 5 - Wrox publication
3. PHP web services - Wrox publication

## B. C. A. (Semester VI)

### 602 : Advanced Java

#### Objectives -:

1. To know the concept of Java Programming.
2. To understand how to use programming in day to day applications.
3. To develop programming logic.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>JDBC</b>  1.1 The design of JDBC 1.2 Basic JDBC program Concept 1.3 Drivers 1.4 Architecture of JDBC 1.5 Making the Connection, Statement , ResultSet , PreparedStatement, CollableStatement 1.6 Executing SQL commands 1.7 Executing queries	10	1,2
2	<b>Networking</b>  2.1 The java.net package 2.2 Connection oriented transmission – Stream Socket Class 2.3 Creating a Socket to a remote host on a port (creating TCP client and server) 2.4 Simple Socket Program Example.	7	1,2
3	<b>Servlet and JSP</b>  3.1 Introduction 3.2 How It differ from CGI 3.3 Types of servlet 3.4 Life cycle of servlet 3.5 Execution process of Servlet Application 3.6 Session Tracking 3.7 Cookie class 3.8 Servlet- Jdbc	10	1,2

	<p><b>JSP</b></p> <p>3.9 Introduction to JSP</p> <p>3.10 Components of JSP Directives , Tags, Scripting Elements</p> <p>3.11 Execution process of JSP Application</p> <p>3.12 Building a simple application using JSP</p> <p>3.13 JSP with Database</p>		
4	<p><b>Multithreading</b></p> <p>4.1 Introduction to Thread</p> <p>4.2 Life cycle of thread</p> <p>4.3 Thread Creation</p> <ul style="list-style-type: none"> <li>- By using Thread Class</li> <li>- By Using Runnable interface</li> </ul> <p>4.4 Priorities and Synchronization</p> <p>4.5 Inter thread communication</p> <p>4.6 Implementation of Thread with Applet</p>	8	1,2,3
5	<p><b>Java Beans and RMI</b></p> <p><b>Java Beans</b></p> <p>5.1 What is bean</p> <p>5.2 Advantages</p> <p>5.3 Using Bean Development kit(BDK)</p> <p>5.4 Introduction to jar and manifest files</p> <p>5.5 The java beans API</p> <p><b>Remote Method Invocation</b></p> <p>5.6 Introduction to remote object RMI architecture</p> <p>5.7 Stubs and skeleton</p> <p>5.8 Registry</p> <p>5.9 Setting up RMI</p> <p>5.10 Using RMI with applet</p>	9	1,2,3
	<b>Total no. Of Lectures</b>	<b>44</b>	

**Reference Books :**

1. The Complete Reference – JAVA Herbert Schildt
2. Core java –II By Cay S. Horstmann and Gary Cornell
3. Compete Reference J2EE – Jim Keogh

## B. C. A. (Semester VI)

### 603 : Recent Trends in IT

#### Objectives:-

1. To introduce upcoming trends in Information technology.
2. To study Eco friendly software development.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Software Process And Project Metrics, Analysis Concepts And Principles</b>  Measures, metric indicators, metric in process and the project domains, software measurement, metrics for software quality, software quality assurance, Requirement analysis, communication techniques, analysis principles, software prototyping, Case Study	6	1
2	<b>Distributed Databases</b>  Standalone v/s Distributed databases, Replication, Fragmentation, Client / Server architecture, types of distributed databases <b>Object – Relational Databases</b> Abstract Data types, Nested Tables, Varying Arrays, Large Objects, Naming Conventions for Objects, Case Study	8	2
3	<b>Data Warehouse</b>  What is Data Warehouse? , A Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Data cube Technology, From Data Warehousing to Data Mining, Data Mining, Functionalities, Data Cleaning, Data Integration and Transformation, Data Reduction	8	4
4	<b>Network Security</b>  Cryptography; Introduction to Cryptography, Substitution Ciphers, Transposition Ciphers, One-Time Pads, Two Fundamental Cryptographic Principles; Symmetric Key Algorithms; DES-The Data Encryption Standards, AES – The Advances Encryption Standard; Public Key algorithms; RSA, Other Public Key algorithms; Digital Signatures, Symmetric-Key Signature, Public key Signature, Message Digests	14	5

5	<b>Computing and Informatics</b> Introduction to computing, Types of computing: Cloud, Green, Soft, Mobile, Case Study	8	5
	<b>Total no. of lectures</b>	<b>44</b>	

**Reference Books :**

1. Roger S. Pressman, Software Engineering , McGraw Hill(1997).
2. Database System Concepts by Korth, Silberschatz, Sudarshan - McGraw Hill
3. Oracle 8i – The Complete Reference, by Kevin Loney, Geroge Koch - Tata McGraw Hill
4. Jiawei Micheline Kamber, “Data Mining Concepts and Techniques”,Morgan Kauf Mann Publishers.
5. William Stallings, "Network Security Essentials", Prentice-Hall.
6. Artificial Intelligence by Elaine Rich, Kevin Knight, TMH, 2nd Edition.

**B. C. A. (Semester VI)**  
**604 : Software Testing**

Objectives :-

1. To know the concept of software testing.
2. To understand how to test bugs in software.
3. To develop programming logic.

Unit No.	Topic	No. of lectures	Reference Books
1	<b>Software Testing</b> Introduction, Nature of errors, Testing principles & Testing fundamentals, Debugging	6	1, 2
2	<b>Approaches to Testing - I</b> White Box Testing, Black Box Testing, Gray Box Testing, Unit Testing Integration- Top-down ,Bottom up Big Bang Sandwich	10	1, 2
3	<b>Testing for Specialized Environments</b> Testing GUI's, Testing of Client/Server Architectures, Testing Documentation and Help Facilities, Testing for Real-Time Systems	10	1, 2
4	<b>Software Testing Strategies &amp; Software metrics</b> Validation Testing, System Testing, verification, Performance Testing, Regression Testing, Agile testing, Acceptance testing ,Smoke Testing ,Load Testing, Introduction, Basic Metrics, Complexity Metrics	12	1, 2
5	<b>Specialized Testing &amp; Testing Tools (Introduction)</b> Test Case Design, Junit, Apache Jmeter, Winrunner Loadrunner, Rational Robot	6	1, 2 www.open sourcetesti ng.org
	<b>Total No. of lectures</b>	<b>44</b>	

**Reference Books:**

1. Software Engineering – A Practitioners Approach, Roger S. Pressman, Tata McGraw Hill
2. Software Engineering for Students- A Programming Approach, Douglas Bell, Pearson Education

**University of Pune**

**STATISTICS**

**For First Year B. Sc. (Computer Science) Degree Course**

**(Formerly known as B. C. S. Course)**

**Syllabus**

**(To be implemented from Academic Year 2013-14)**

**Submitted by: Board of Studies, Statistics**

**1) Title of the Course:** First Year B. Sc. (Computer Science)

**2) Preamble:** Statistics is a branch of science that can be applied practically in every walk of life. Statistics deals with any decision making activity in which there is certain degree of uncertainty and Statistics helps in taking decisions in an objective and rational way. The student of Statistics can study it purely theoretically which is usually done in research activity or it can be studied as a systematic collection of tools and techniques to be applied in solving a problem in real life.

In last 5 to 7 years, computers are playing very crucial role in the society. The use of computers has horizontally spread and also penetrated vertically in the society. It has become a part and parcel of common man. Thus there is a huge demand for computer education.

The University of Pune had done a pioneering work in this area and Three year degree course B. Sc. (Computer Science) of University of Pune (formerly known as B.C.S.) is very popular among the student community and I. T. Industry. This course covers various subjects which are required directly or indirectly for becoming computer professional. Statistics is one such important subject which is required and is extensively used in a vast spectrum of computer based applications. Data Mining and Warehousing, Theoretical Computer Science, Reliability of a computer Programme or Software, Machine Learning, Artificial Intelligence, Pattern Recognition, Digital Image Processing, Embedded Systems are just few applications to name where Statistics can be extensively used.

**3) Introduction:** The syllabus of Statistics for First Year of this course covers basic concepts and terminology in Statistics and covers basic tools and methods required for data analysis. The teachers teaching this syllabus and students should give emphasis on understanding the concepts and ability to apply statistical tools and techniques and not on the theoretical discussion. It is

expected that at the end of the course, a student should be well equipped to learn and apply acquired techniques in computer based applications.

**4) Eligibility:** 12<sup>th</sup> Science with Mathematics

Students admitted to F.Y.B.Sc.(C.S.) will be taking this as one of the compulsory course. Admissions to F.Y.B.Sc.(C.S.) will be given as per the selection procedure / policies adopted by the respective college keeping in accordance with conditions laid down by the University of Pune. Reservation and relaxation will be as per the Government rules.

**5) Examination:**

**A) Pattern of examination and of question paper:**

**For Theory Papers (For Paper I and II):**

Internal examination - 20 marks (10 marks for each semester)

Objective type/ short answer questions with maximum 2 marks for each question.

University Examination - 80 marks at the end of the year.

5 questions carrying 16 marks each.

Q1: Attempt all of the following: (2 marks each) (8 sub questions)

Q2, Q3, Q4, Q5: Attempt any four of the following (4 marks each) (any 4 out of 5 or out of 6)

**For Practical paper in Statistics (Paper III):**

Internal Evaluation of 20 marks -

(i) Statistics Journal & Attendance – 10 marks

(ii) Project Evaluation – 5 marks

(iii) Viva – 5 marks

External Examination of 80 marks – Total Duration 3 hours

(i) Questions based upon spreadsheet – 3 questions (1 question on diagrams) each of 10 marks should be asked. Total Duration – 1 hour, Total marks – 30.

(ii) Questions to be solved manually using scientific calculator – to solve any two questions out of 3 questions of 25 marks each. Total Duration – 2 hours, Total marks – 50.

**B) Standard of Passing:** In order to pass in the first year theory and practical examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks must be obtained in the University Theory Examination.)

**C) ATKT Rules:** Not applicable, since Statistics is one of the compulsory courses taken at F.Y. level.

**D) Award of Class:** Not applicable, since Statistics is one of the compulsory courses taken at F.Y. level.



**E) External Students:** There shall be no external students.

**F) Pattern of question paper:** As specified in A)

**G) Verification/Revaluation:** As per the University rules

**6) Structure of the Course:**

F. Y. B. Sc.(C.S.) Statistics

Paper	Course Title	Marks	Lectures
Paper - I	Statistical Methods I	100	Three Hours/Week per Paper (Total 36/Paper per term)
Paper - II	Statistical Methods II	100	
Practical Course	Practical Course	100	Three Hours / Week

**Medium of Instruction:** The medium of instruction for the course shall be English

**7) Equivalence of Previous Syllabus:** No equivalence required at F. Y. B. Sc. level, the course titles are same as previous syllabus.

**8) University Terms:** Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 75 percent attendance at theory and practical course and satisfactory performance during the term.

**9) Course wise Detail Syllabus**

Detailed Syllabus for Statistics Paper I (Statistical Methods I)

1.	Data condensation and Graphical methods 1.1 Raw data, attributes and variables, discrete and continuous variables. 1.2 Presentation of data using frequency distribution and cumulative frequency distribution. (Construction of frequency is not expected) 1.3 Graphical Presentation of frequency distribution –histogram, stem and leaf chart, less than and more than type ogive curves. 1.4 Numerical problems related to real life situations.	5
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2.	<p>Review/Revision of Descriptive Statistics</p> <p>2.1 Measures of Central tendency: Mean, Mode, Median. Examples where each one of these is most appropriate.</p> <p>2.2 Partition values: Quartiles, Box-Plot.</p> <p>2.3 Measures of Dispersion: Variance, Standard Deviation, Coefficient of Variation.</p> <p>(Section 2.1 to 2.3 should be covered for raw data, ungrouped frequency distribution and exclusive type grouped frequency distribution)</p>	7
3.	<p>Moments</p> <p>3.1 Raw and Central moments: definition, computations for ungrouped and grouped data (only up to first four moments).</p> <p>3.2 Relation between raw and central moments upto fourth order.</p> <p>3.3 Numerical problems related to real life situations.</p>	3
4.	<p>Measures of Skewness and Kurtosis</p> <p>4.1 Concept of symmetric frequency distribution, skewness, positive and negative skewness.</p> <p>4.2 Measures of skewness-Pearson's measure, Bowley's measure, <math>\beta_1, \gamma_1</math>.</p> <p>4.3 Kurtosis of a frequency distribution, measure of kurtosis(<math>\beta_2, \gamma_2</math>) based upon moments, type of kurtosis: leptokurtic, platykurtic and mesokurtic.</p> <p>4.5 Numerical problems related to real life situations.</p>	4
5.	<p>Discrete Random variable</p> <p>5.1 Definition of random variable and discrete random variable.</p> <p>5.2 Definition of probability mass function, distribution function and its properties.</p> <p>5.3 Definition of expectation and variance, theorem on expectation.</p> <p>5.4 Determination of median and mode using p.m.f.</p> <p>5.5 Numerical problems related to real life situations.</p>	8
6.	<p>Standard Discrete Distributions</p> <p>6.1 Discrete Uniform Distribution: definition, mean, variance.</p> <p>6.2 Bernoulli Distribution: definition, mean, variance, additive property.</p> <p>6.3 Binomial Distribution: definition, mean, variance, additive property.</p> <p>6.4 Geometric Distribution (p.m.f <math>p(x) = pq^x</math>, <math>x = 0, 1, 2, \dots</math>): definition, mean, variance.</p> <p>6.5 Poisson Distribution: definition, mean, variance, mode, additive property, limiting case of <math>B(n, p)</math></p> <p>6.6 Illustration of real life situations.</p> <p>6.7 Numerical problems related to real life situations.</p>	15
7.	<p>Correlation (for bivariate raw data)</p> <p>7.1 Bivariate data, Scatter diagram.</p> <p>7.2 Correlation, Positive Correlation, Negative Correlation, Zero Correlation</p> <p>7.3 Karl Pearson's coefficient of correlation (<math>r</math>), limits of <math>r</math> (<math>-1 \leq r \leq 1</math>), interpretation of <math>r</math>, Coefficient of determination (<math>r^2</math>), Auto-correlation upto lags 2.</p> <p>7.4 Numerical Problems.</p>	6

8	<p>Regression (for ungrouped data)</p> <p>8.1 Regression: illustrations, appropriate situations for regression and correlation.</p> <p>8.2 Linear Regression.</p> <p>8.3 Fitting of straight line using least square method.</p> <p>8.4 Properties of regression coefficients: <math>b_{xy} \cdot b_{yx} = r^2</math>, <math>b_{yx} \cdot b_{xy} &lt; 1</math>, <math>b_{yx} = r(\sigma_y/\sigma_x)</math> and <math>b_{xy} = r(\sigma_x/\sigma_y)</math></p> <p>8.5 Non Linear regression models: second degree curve, growth curve models.  i) <math>Y = ae^{bx}</math>    ii) <math>Y = ab^x</math>    iii) <math>Y = aX^b</math>  iv) logistic model <math>Y = k / (1+e^{a+bx})</math></p> <p>8.6 Residual plot, mean residual sum of squares (m. s. s)</p> <p>8.7 Numerical problems related to real life situations.</p>	9
9	<p>Multiple and Partial Correlation and Regression (for trivariate data)</p> <p>9.1 Yule's notation and concept of multiple regression.</p> <p>9.2 Fitting of multiple regression plane.</p> <p>9.3 Partial regression coefficient, interpretation.</p> <p>9.4 Multiple correlation coefficient, concept, definition, computation and interpretation.</p> <p>9.5 Partial correlation coefficient, concept, definition, computation and interpretation.</p>	8
10	<p>Time Series</p> <p>10.1 Meaning and Utility.</p> <p>10.2 Components of Time Series.</p> <p>10.3 Additive and Multiplicative models.</p> <p>10.4 Methods of estimating trend: moving average method, least squares method and exponential smoothing method.</p> <p>10.5 Elimination of trend using additive and multiplicative models.</p> <p>10.6 Simple time series models: AR (1), AR (2).</p> <p>10.7 Numerical problems related to real life situations.</p>	7
Syllabus for 1 <sup>st</sup> term is upto Binomial Distribution in Topic 6.		

### Detailed Syllabus for Statistics Paper II (Statistical Methods II)

1	<p>Detailed Review / Revision of Theory of Probability</p> <p>1.1 Counting Principles, Permutation, and Combination.</p> <p>1.2 Deterministic and non-determination models.</p> <p>1.3 Random Experiment, Sample Spaces (finite and countably infinite)</p> <p>1.4 Events: types of events, Operations on events.</p> <p>1.5 Probability - classical definition, probability models, axioms of probability, probability of an event.</p> <p>1.6 Theorems of probability (with proof)  i) <math>0 \leq P(A) \leq 1</math> ii) <math>P(A) + P(A') = 1</math> iii) <math>P(A) \leq P(B)</math> when <math>A \subset B</math>  iv) <math>P(A \cup B) = P(A) + P(B) - P(A \cap B)</math></p> <p>1.7 Numerical problems related to real life situations.</p>	5
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2	<p>Advanced Theory of Probability</p> <p>2.1 Concepts and definitions of conditional probability, multiplication theorem <math>P(A \cap B) = P(A) \cdot P(B A)</math></p> <p>2.2 Bayes' theorem (without proof)</p> <p>2.3 Concept of Posterior probability, problems on posterior probability.</p> <p>2.4 Definition of sensitivity of a procedure, specificity of a procedure. Application of Bayes' theorem to design a procedure for false positive and false negative.</p> <p>2.5 Concept and definition of independence of two events.</p> <p>2.6 Numerical problems related to real life situations.</p>	12
3	<p>Continuous Random Variable</p> <p>3.1 Definition of continuous random variable (r. v.),</p> <p>3.2 Probability density function (p.d.f.),</p> <p>3.3 Cumulative distribution function (c.d.f.), its properties.</p> <p>3.4 Calculation of mean, mode, median, variance, standard deviation for continuous r. v.</p> <p>3.5 Numerical problems related to real life situations.</p>	6
4	<p>Standard Continuous Probability Distributions</p> <p>4.1 Uniform Distribution: statement of p.d.f., mean, variance, nature of probability curve.</p> <p>4.2 Exponential Distribution: statement of p.d.f. of the form, <math>f(x) = (1/\theta) e^{-x/\theta}</math>, mean, variance, nature of probability curve, lack of memory property.</p> <p>4.3 Normal Distribution: statement of p.d.f., identification of parameters, nature of probability density curve, standard normal distribution, symmetry, distribution of <math>aX+b</math>, <math>aX+bY+c</math> where <math>X</math> and <math>Y</math> are independent normal variables, computations of probabilities using normal probability table, normal approximation to binomial and Poisson distribution, central limit theorem (statement only), normal probability plot.</p> <p>4.4 Pareto Distribution: p.d.f. of the form <math>f(x) = \frac{\alpha}{x^{\alpha+1}}</math>, <math>x \geq 1, \alpha &gt; 0</math>, mean, variance, applications.</p> <p>4.5 Numerical problems related to real life situations.</p>	13
	End of First term.	
5	<p>Concepts and definitions related to testing of hypothesis</p> <p>5.1 Definitions: population, statistic, SRSWR, SRSWOR, random sample from a probability distribution, parameter, statistic, standard error of estimator.</p> <p>5.2 Concept of null hypothesis and alternative hypothesis, critical region, level of significance, type I and type II error, one sided and two sided tests, p-value.</p>	5

6	<p>Large Sample Tests</p> <p>6.1 <math>H_0: \mu = \mu_0</math> Vs <math>H_1: \mu \neq \mu_0, \mu &lt; \mu_0, \mu &gt; \mu_0</math> (One sided and two sided tests)</p> <p>6.2 <math>H_0: \mu_1 = \mu_2</math> Vs <math>H_1: \mu_1 \neq \mu_2, \mu_1 &lt; \mu_2, \mu_1 &gt; \mu_2</math> (One sided and two sided tests)</p> <p>6.3 <math>H_0: P = P_0</math> Vs <math>H_1: P \neq P_0, P &lt; P_0, P &gt; P_0</math> (One sided and two sided tests)</p> <p>6.4 <math>H_0: P_1 = P_2</math> Vs <math>H_1: P_1 \neq P_2, P_1 &lt; P_2, P_1 &gt; P_2</math> (One sided and two sided tests)</p> <p>6.5 Numerical problems related to real life situations.</p>	7
7	<p>Tests based on t-distribution</p> <p>7.1 <math>H_0: \mu = \mu_0</math> Vs <math>H_1: \mu \neq \mu_0, \mu &lt; \mu_0, \mu &gt; \mu_0</math> (One sided and two sided tests)</p> <p>7.2 <math>H_0: \mu_1 = \mu_2</math> Vs <math>H_1: \mu_1 \neq \mu_2, \mu_1 &lt; \mu_2, \mu_1 &gt; \mu_2</math> (One sided and two sided tests)</p> <p>7.3 Paired t-test.</p> <p>7.4 Test of significance of correlation coefficient for bivariate raw data.</p> <p>7.5 Test of significance of regression coefficients for bivariate raw data.</p> <p>7.6 Numerical problems related to real life situations.</p>	8
8	<p>Test based on Chi-square distribution</p> <p>8.1 Chi square test for goodness of fit</p> <p>8.2 Test for independence of attributes (m X n contingency table)</p> <p>8.3 Test for significance of variation for a population.</p> <p>8.4 Numerical problems related to real life situations.</p>	3
9	<p>Non parametric tests</p> <p>9.1 Run test</p> <p>9.2 Sign test.</p> <p>9.3 Kolmogrov - Smirnov test</p> <p>9.4 Mann – Whitney test</p> <p>9.5 Numerical problems related to real life situations.</p>	6
10	<p>Simulation</p> <p>10.1 Introduction to Simulation, merits and demerits and pitfall.</p> <p>10.2 Pseudo-random number generator ,requisites of a good random number generator, Testing these requirements by using various test of hypothesis using Run test, goodness of fit test, Sign test etc.</p> <p>10.3 Model Sampling from uniform and exponential distribution.</p> <p>10.4 Model sampling from Normal distribution using Box-Muller transformation.</p> <p>10.5 Numerical problems related to real life situations.</p>	7

### Detailed Syllabus for Statistics Paper III (Practical)

A) Practicals to be done manually using scientific calculator

1	Measures of Central Tendency and Dispersion.
2	Problems on simple probability, conditional probability, Baye's theorem and independence of events.
3	Measures of skewness and kurtosis

4	Correlation and Linear Regression Analysis. (for bivariate raw data)
5	Fitting of second degree and exponential type models. (for bivariate raw data)
6	Multiple and Partial Correlation and Regression Analysis. (for trivariate data) + Using spreadsheet with use of readymade function.
7	Time Series (Moving Average and Fitting of AR(1) and AR(2) models).
8	Fitting of Binomial and Poisson distributions.
9	Fitting of Normal Distribution.
10	Model Sampling from Simple Continuous Distributions
11	Large Sample Tests.
12	Tests based upon t distribution.
13	Tests based upon chi square distribution.
14	Non parametric tests.

B) Practicals to be done using any spreadsheet (like MS-Excel in MS-Windows or Open-Office in Linux etc.)

1	Diagrammatic Representation and Descriptive Statistics for raw data
2	For a bivariate raw data, fitting various models and finding the "best fit". (3 problems to be solved in a slot)
3	Fitting of Geometric Distribution and Normal Distribution
4	Using random numbers, drawing of a sample from exponential distribution, normal distribution (Box Muller Transformation) etc.

C) Project –

Project is compulsory which is equivalent to 2 practicals.

Project will carry 5 marks as part of internal evaluation.

One project should be given to one practical batch of students.

The formal project report should be prepared by each student and it must be attached in Statistics journal.

### 10) Recommended books

Author Name	Year of Publication	Title	Publisher
Medhi J.	1992	Statistical Methods (An Introductory Text)	New Age International
Freund J.E.	2005	Modern Elementary Statistics	Pearson Publication
Trivedi K.S.	2001	Probability, Statistics, Design of Experiments and Queuing Theory with Applications of Computer Science	Prentice Hall of India, New Delhi

Gupta S. C. and Kapoor V. K.	1987	Fundamentals of Applied Statistics (3rd Edition)	S. Chand and Sons, New Delhi.
Ross S. M.	2006	A First Course In Probability 6th Edition	Pearson publication
Law A. M. and Kelton W. D.	2007	Simulation Modelling and Analysis	Tata McGraw Hill
Box G. E. P. and Jenkins G. M.	2008	Time Series Analysis, 4 <sup>th</sup> edition	Wiley
Brockwell P. J. and Davis R. A.	2006	Time Series Methods	Springer
Snedecor G. W. Cochran W. G.	1989	Statistical Methods	John Wiley & sons
Kulkarni M.B., Ghatpande S.B., Gore S.D.	1999	Common Statistical Tests	Satyajeet Prakashan, Pune
Kulkarni M.B., Ghatpande S.B.	2007	Introduction to Discrete Probability and Probability Distributions	SIPF Academy
Sarma K.V.S.	2001	Statistics Made Simple. Do it Yourself on P.C.	Prentice Hall

**11) Qualification of Teacher:** As per the University rules

# **Syllabus for S.Y.B.Sc.(Computer Science) to be implemented from 2014-15**

**Important to Note about Laboratory courses:** It is absolutely necessary and essential that all the practical's for Paper III and Paper IV be conducted on Free and Open Source Operating System like Linux.

- All the practical's related to C and C++ needs to be conducted using GCC compiler.
- For laboratory work/assignments of Database Systems, PostgreSQL to be used.



## 1) Title of the Course : B. Sc. Computer Science

### S.Y.B.Sc. Computer Science Syllabus (To be implemented from Academic Year 2014-15)

#### 2) Preamble:

B. Sc. Computer Science is a systematically designed three year course that prepares the student for a career in Software Industry. The syllabus of computer Science subject along with that of the three allied subjects (Mathematics, Electronics and Statistics) forms the required basics for pursuing higher studies in Computer Science. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

#### 3) Introduction:

At **first year of under-graduation** basic foundation of two important skills required for software development is laid. A course in programming and a course in database fundamentals forms the preliminary skill set for solving computational problems. Simultaneously two practical courses are designed to supplement the theoretical training. The second practical course also includes a preliminary preparation for website designing in the form of HTML programming.

Alongwith Computer Science two theory and one practical course each in Statistics, Mathematics and Electronics help in building a strong foundation.

At **second year under-graduation**: The programming skills are further strengthened by a course in Data structures and Object oriented programming. The advanced topics in Databases and preliminary software engineering form the second course. Two practical courses alongside help in hands-on training. Students also undertake a mini project using software engineering principles to solve a real world problem.

Simultaneously two theory and one practical course each in Mathematics and Electronics help in strengthening problem solving abilities.

At **third year under-graduation**: Six theory papers in each semester and practical courses cover the entire spectrum of topics necessary to build knowledge base and requisite skill set. Third practical course also includes project work which gives students hands on experience in solving a real world problem.

#### Objectives:

- To develop problem solving abilities using a computer
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To imbibe quality software development practices. To create awareness about process and product standards
- To train students in professional skills related to Software Industry.

- To prepare necessary knowledge base for research and development in Computer Science
- To help students build-up a successful career in Computer Science

**4) Eligibility:**

Higher Secondary School Certificate (10+2) Science stream or its equivalent Examination as per the University of Pune eligibility norms.

**Note:** Admissions will be given as per the selection procedure / policies adopted by the respective college, in accordance with conditions laid down by the University of Pune. Reservation and relaxation will be as per the Government rules.

**5 A) Examination Pattern:**

**First Year B. Sc. Computer Science**

**Subject: Computer Science**

Pattern of Examination: Annual

Theory courses (CS-101): Annual

(CS-102): Annual

Practical Course (CS-103): Annual

(CS-104): Annual

Paper/ Course No.	Title	Total Number of lectures/practical's per Term	Standard of passing		
			Internal marks out of <b>20</b>	External marks out of <b>80</b>	Total marks out of <b>100</b>
Computer Science Paper I (CS-101)	Problem Solving Using Computers and 'C' Programmi ng	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Paper II CS-102)	File Organizatio n and Fundament al of Databases	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Practical Paper I (CS-103)	Computer Science Practical Paper I	25 Practical slots of 4 lectures each	08	32	40 *

Computer Science Practical Paper II (CS-104)	Computer Science Practical Paper II	25 Practical slots of 4 lectures each	08	32	40 *
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\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory (100 + 100 ) = 200 marks
2. Total marks per year 200 (Theory) + 100 marks (practical)+ Grade(practical) = 300 marks +Grade
3. Internal marks for theory papers given on the basis of internal assessment tests and for practicals on continuous assessment of lab work.
4. In case of Computer Science Practical Paper II, marks out of 100 will be converted to grades

Marks	Grade
75 and above	O
65 and above	A
55 and above	B
50 and above	C
45 and above	D
40 and above	E
Below 40 ( indicates Failure)	F

**Theory examination** will be of three hours duration for each theory course. There shall be 5 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	8 sub-questions, each of 2 marks; answerable in 2 -3 lines and based on entire syllabus
Question 2, 3 ,4 and 5	4 out of 5/6– short answer type questions; answerable in 8 – 10 lines ; mix of theory and problems

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain). There shall be 20 questions.

Practical: Continuous assessment of Lab work and mini project.

**Practical Examination:** Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of 3 hours duration for each practical course. Certified journal is compulsory to appear for practical examination. There shall be two expert and two examiners per batch for the practical examination.

### Second Year B. Sc. Computer Science

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-211:Data Structures using 'C'	CS-221:Object Oriented Concepts using C++
2	Computer Science Paper II	CS-212: Relational Database Management System	CS-222:Software Engineering
3	Computer Science Paper III	CS-223:Data structures Practicals and C++ Practicals	
4	Computer Science Paper IV	CS-224:Database Practicals & Mini Project using Software Engineering techniques	
5	Mathematics Paper I	MT-211:Mathematics Paper I-Sem I	MT-221:Mathematics Paper I-Sem II
6	Mathematics Paper II	MT-212:Mathematics Paper II-Sem I	MT-222:Mathematics Paper II-Sem II
7	Mathematics Paper III	MT-223:Practical Course in Mathematics	
8	Electronics Paper I	EL-211:Electronics Paper I-Sem I	EL-221:Electronics Paper I-Sem II
9	Electronics Paper II	EL-212:Electronics Paper II-Sem I	EL-222:Electronics Paper II-Sem II
10	Electronics Paper III	EL-223:Practical Course in Electronics	
11	English	EN-211:Technical English-Sem I	EN-221:Technical English – Sem II

Pattern of examination: Semester

Theory courses (Sem I: CS-211 and CS212): Semester  
(Sem II: CS-221 and CS-222): Semester

Practical Course (CS-223 and CS-224): Annual

Paper/ Course No.	Title	Total Number of lectures/practicals Per Semester	Standard of passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
Theory Paper I (CS- 211)	Data Structures using 'C'	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper II (CS 212)	Relational Database Management System	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper I (CS 221)	Object Oriented Concepts using C++	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper II (CS 222)	Software Engineering	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Practical paper I (CS 223) (First & Second Sem)	Data structures Practicals and C++ Practicals	Practicals of 4 lectures each 25 practicals/Yr.)	08	32	40 **
Practical paper II (CS 223) (First & Second Semester)	Database Practicals & Mini Project using Software Engineering techniques	Practicals of 4 lectures each 25 practicals/ Yr.)	08	32	40 **

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 + 50 ) = 100 marks
2. Total marks per year 200 (Theory) + 100 marks (practicals)+Grade(practical) = 300 marks+Grade
3. Internal marks for theory papers given on the basis of Continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 questions, each of 1 marks	10 marks
Question 2 3	Sub-questions carrying 5 marks (2 out of 3)	10 marks each
Question 4	Sub-questions carrying marks depending on their complexity with options	10 marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

**Practicals:** Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Certified journal is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

### Third Year B. Sc. Computer Science

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-331: System Programming	CS-341: Operating System
2	Computer Science Paper II	CS-332: Theoretical Computer Science	CS-342: Compiler Construction
3	Computer Science Paper III	CS-333: Computer Networks-I	CS-343: Computer Networks-II
4	Computer Science Paper IV	CS-334: Internet Programming- I	CS-344: Internet Programming- II
5	Computer Science Paper V	CS-335: Programming in Java-I	CS-345: Programming in Java-II

6	Computer Science Paper VI	CS-336:Object Oriented Software Engineering	CS-346:Computer Graphics
7	Computer Science Paper VII	CS-347:Practicals Based on CS-331 and CS341 – Sem I &Sem II	
8	Computer Science Paper VIII	CS-348:Practicals Based on CS-335 and CS-344 – Sem I &Sem II and Computer Graphics using Java	
9	Computer Science Paper IX	CS-349:Practicals Based on CS-334 and CS-344 – Sem I &Sem II andProject	

### Subject: Computer Science

Pattern of examination: Semester

Theory courses:

(Sem III: CS-331-CS-336): Semester (Sem IV: CS-341-CS-346): Semester

Practical Course:

(CS-347-CS-349): Annual

Theory Papers					
Paper/Course No.	Title	Total Number of lectures Per Semester	Standard of passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
<b>SEM III</b>					
CS-331	System Programming	48	4	16	20*
CS-332	Theoretical Computer Science	48	4	16	20*
CS-333	Computer Networks-I	48	4	16	20*
CS-334	Internet Programming- I	48	4	16	20*
CS-335	Programming in Java-I	48	4	16	20*
CS-336	Object Oriented Software Engineering	48	4	16	20*
<b>SEM IV</b>					

CS-341	Operating System	48	4	16	20*
CS-342	Compiler Construction	48	4	16	20*
CS-343	Computer Networks-II	48	4	16	20*
CS-344	Internet Programming- I	48	4	16	20*
CS-345	Programming in Java-I	48	4	16	20*
CS-346	Computer Graphics	48	4	16	20*
<b>Practical Papers</b>					
CS 347 (Semester III & IV)	Practicals Based on CS-331 and CS-341 – Sem I & Sem II	25 practicals/ year	08	32	40 **
CS 348 (Semester III & IV)	CS-348:Practicals Based on CS-335 and Cs-344 – Sem I & Sem II and Computer Graphics using Java	25 practicals/ year	08	32	40 **
CS 349 (Semester III & IV)	CS-349:Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	25 practicals/ year	08	32	40 **

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100



Notes:

1. Total marks: Theory for each semester ( $50 \times 6$ ) = 300 marks
2. Total marks per year 600 (Theory) + 300 marks (practicals) = 900 marks
3. Internal marks for theory papers given on the basis of continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 questions, each of 1 marks	10 marks
Question 2 and 3	Sub-questions carrying 5 marks (2 out of 3)	10 marks each
Question 4	Sub-questions carrying marks depending on their complexity with options	10 marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: one internal assessment test + practical journals + attendance + activity.

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Certified journal is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

### 5 B) Standard of Passing:

- i. In order to pass in the first year theory examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Theory Examination.)
- ii. In order to pass in the Second Year and Third Year theory examination, the candidate has to obtain 20 marks out of 50 in each course of each semester. (Minimum 16 marks out of 40 must be obtained in the University Theory Examination.)
- iii. In order to pass in practical examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Examination.)

**5 C) ATKT Rules:**

While going from F.Y.B.Sc. to S.Y.B.Sc. at least 8 courses (out of total 13) should be passed; however all F.Y.B.Sc. courses should be passed while going to T.Y.B.Sc.

While going from S.Y.B.Sc. to T.Y.B.Sc., at least 12 courses (out of 22) should be passed (Practical Course at S.Y.B.Sc. will be equivalent to 2 courses).

**5 D) Award of Class:**

The class will be awarded to the student on the aggregate marks obtained during the second and third year in the principal subject only. The award of the class shall be as follows:

1	Aggregate 70% and above	First Class with Distinction
2	Aggregate 60% and more but less than 70%	First Class
3	Aggregate 55% and more but less than 60%	Higher Second Class
4	Aggregate 50% and more but less than 55%	Second Class
5	Aggregate 40% and more but less than 50%	Pass Class
6	Below 40%	Fail

**5 E) External Students:** There shall be no external students.

**5 F) Setting question papers:**

**F.Y.B.Sc.:** For theory papers I and II annual question papers shall be set by the University of Pune and assessment done at the respective colleges. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers, the Question paper slips will be provided by the University of Pune and assessment done at the respective colleges.

**S.Y.B.Sc. and T.Y.B.Sc.:** For theory papers I and II for each semester and also for the annual practical examination question papers set by the University of Pune. Centralized assessment for theory papers done as per the University instructions. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers: Papers shall be set by the University of Pune and assessment done by the internal examiner and external examiner appointed by University of Pune.

### 5G) Verification and Revaluation Rules:

As per university Statues and rules for verification and revaluation of marks in stipulated time after declaration of the semester examination result.

### 6) Course Structure:

**Duration:** The duration of B.Sc. Computer Science Degree Program shall be three years.

**a) All are Compulsory Papers:**

F.Y.B.Sc. : 2 Theory + 2 Practical (Annual)

S .Y.B.Sc.: 2 Theory per semester + 2 Practical (Annual)

T.Y.B.Sc.: 6 Theory per semester + 3 Practical (Annual)

**b) Question Papers :**

**F.Y.B.Sc.Theory paper:**

University Examination – 80 marks (at the end of 2<sup>nd</sup> term)

Internal Examination – 20 marks

**S.Y / T.Y. - B.Sc.Theory paper:**

University Examination – 40 marks (at the end of each term)

Internal Examination – 10 marks

**F.Y. / S.Y / T.Y. - B.Sc.Practical Paper:**

University Examination – 80 marks (at the end of 2<sup>nd</sup> term)

Internal Examination – 20 marks

**c) Medium of Instruction:** The medium of instruction for the course shall be English.

### 7) Equivalence of Previous Syllabus:

Semester & Paper	Title of Paper (Old Pattern)(Implemented from theacademic year 2009-10)	Title of Paper (New Pattern)(to be implemented from the academic year 2014-15)
Semester-I, Paper-I	CS-211, Data Structures Using C	CS-211 Data Structures using 'C'
Semester-I, Paper-II	CS- 212, Relational Database Management System	CS-212 Relational Database Management System
Semester-II, Paper-I	CS-221, Object Oriented Concepts and Programming in C++	CS-221 Object Oriented Conceptsusing C++
Semester-II, Paper-II	CS-222, Software Engineering	CS-222Software Engineering
Practical paper II (CS 223) (First & Second	CS-224: Database Assignments and Mini Project using Software Engineering	CS-224: Database Practicals & Mini Project using Software

Semester)	Techniques	Engineering techniques
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**8) University Terms:** Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 75 percent attendance at theory and practical course and satisfactory performance during the term.

**9) Qualification of Teachers:** M.Sc. Computer Science/M.C.A. or equivalent master degree in science with class/grades and NET/SET as per prevailing University/Government /UGC rules.

**10) Detail Syllabus with Recommended Books:**

**S.Y.B.Sc. Computer Science Paper I**

CS-211: Data Structures using 'C'  
 CS-221: Object Oriented Concepts using C++

**S.Y.B.Sc. Computer Science Paper II**

CS-212: Relational Database Management System  
 CS-222: Software Engineering

**S.Y.B.Sc. Computer Science Paper III**

CS-223: Data structures Practicals and C++ Practicals

**S.Y.B.Sc. Computer Science Paper IV**

CS-224: Database Practicals & Mini Project using Software Engineering techniques

**S.Y.B.Sc. Computer Science Theory Paper I**  
**Semester – 1**  
**CS 211- DATA STRUCTURES USING ‘C’**  
**(Compulsory Course)**

**Total Lectures: 48**

**Objective:**

1. To learn the systematic way of solving problem
2. To understand the different methods of organizing large amount of data
3. To efficiently implement the different data structures
4. To efficiently implement solutions for specific problems

**Prerequisites:** Knowledge of C Programming Language

**1. Introduction to data structures [3]**

- 1.1 Concept
- 1.2 Data type, Data object, ADT
  - 1.2.1 Data Type
- 1.2.2 Data Object
  - 1.2.3 ADT -Definition, Operation, examples on rational number
- 1.3 Need of Data Structure
- 1.4 Types of Data Structure

**2. Algorithm analysis [2]**

- 2.1 Algorithm – definition, characteristics
- 2.2 Space complexity, time complexity
- 2.3 Asymptotic notation (Big O, Omega  $\Omega$ )

**3. Linear data structures [6]**

- 3.1 Introduction to Arrays - array representation
- 3.2 Sorting algorithms with efficiency
  - Bubble sort, Insertion sort, Merge sort, Quick Sort
- 3.3 Searching techniques –Linear Search, Binary search

**4. Linked List [8]**

- 4.1 Introduction to Linked List
- 4.2 Implementation of Linked List – Static & Dynamic representation,
- 4.3 Types of Linked List
- 4.4 Operations on Linked List
  - create, display, insert, delete, reverse, search, sort, concatenate &merge
- 4.5 Applications of Linked List – polynomial manipulation
- 4.6 Generalized linked list – Concept and Representation

## 5. Stacks [6]

- 5.1 Introduction
- 5.2 Representation- Static & Dynamic
- 5.3 Operations
- 5.4 Application - infix to postfix, infix to prefix, postfix evaluation,
- 5.5 Simulating recursion using stack

## 6. Queues [4]

- 6.1 Introduction
- 6.2 Representation - Static & Dynamic
- 6.3 Operations
- 6.4 Circular queue, priority queue (with implementation)
- 6.5 Concept of doubly ended queue

## 7. Trees [12]

- 7.1 Concept & Terminologies
- 7.2 Binary tree, binary search tree
- 7.3 Representation – Static and Dynamic
- 7.4 Operations on BST – create, Insert, delete, traversals (preorder, inorder, postorder), counting leaf, non-leaf & total nodes , non recursive inorder traversal
- 7.5 Application - Heap sort
- 7.6 Height balanced tree- AVL trees- Rotations, AVL tree examples.

## 8. Graph [7]

- 8.1 Concept & terminologies
- 8.2 Graph Representation – Adjacency matrix, adjacency list, inverse Adjacency list, adjacency multilist, orthogonal list
- 8.3 Traversals – BFS and DFS
- 8.4 Applications – AOV network – topological sort, AOE network – critical path

## References:

1. Fundamentals of Data Structures ---- By Horowitz Sahani (Galgotia)
2. Data Structures using C and C++ --- By [YedidyahLangsam](#), [Aaron M. Tenenbaum](#), [Moshe J. Augenstein](#)
3. Introduction to Data Structures using C---By Ashok Kamthane
4. Data Structures using C --- Bandopadhyay&Dey (Pearson)
5. Data Structures using C ---By Srivastava BPB Publication.

**S.Y.B.Sc. Computer Science Theory paper-II**  
**Semester – I**

**CS-212-Relational Database Management System**  
**(Compulsory Course)**

**Total Lectures: 48**

**Objective:-**

- To teach fundamental concepts of RDBMS (PL/PgSQL)
- To teach principles of databases
- To teach database management operations
- To teach data security and its importance
- To teach client server architecture

**Prerequisites:** Knowledge of DBMS

**1. Relational Database Design [14]**

1.1 Preliminaries

Functional Dependencies

Basic concepts : Closure of a set of functional dependencies, Closure of attribute set, Canonical cover, Decomposition.

1.2 PL/PgSQL: Datatypes, Language structure

1.3 Controlling the program flow, conditional statements, loops

1.4 Views

1.5 Stored Functions, Stored Procedures

1.6 Handling errors and exceptions

1.7 Cursors

1.8 Triggers

**2 Transaction Concepts and concurrency control [14]**

2.1 Describe a transaction, properties of transaction, state of the transaction.

2.2 Executing transactions concurrently associated problem in concurrent execution.

2.3 Schedules, types of schedules, concept of Serializability, precedencegraph for Serializability.

2.4 Ensuring Serializability by locks, different lock modes, 2PL and its variations.

2.5 Basic timestamp method for concurrency, Thomas Write Rule.

2.6 Locks with multiple granularity, dynamic database concurrency (Phantom Problem).

2.7 Timestamps versus locking.

2.8 Deadlock handling methods

2.8.1 Detection and Recovery (Wait for graph).

2.8.2 Prevention algorithms (Wound-wait, Wait-die)

### **3 Database Integrity and Security Concepts [8]**

3.1 Domain constraints

3.2 Referential Integrity

3.3 Introduction to database security concepts

3.4 Methods for database security

3.4.1 Discretionary access control method

3.4.2 Mandatory access control and role base access control for multilevel security.

3.5 Use of views in security enforcement.

3.6 Overview of encryption technique for security.

3.7 Statistical database security.

### **4 Crash Recovery [8]**

4.1 Failure classification

4.2 Recovery concepts

4.3 Log base recovery techniques (Deferred and Immediate update)

4.4 Checkpoints

4.5 Recovery with concurrent transactions (Rollback, checkpoints, commit)

4.6 Database backup and recovery from catastrophic failure.

### **5. Client-Server Technology [4]**

5.1 Describe client-server computing.



5.2 Evolution of Client - Server information systems.

5.3 Client – Server Architecture benefits.

5.4 Client Server Architecture

- Components, Principles, Client Components
- Communication middleware components
- Database middleware components
- Client Server Databases

**References:-**

1. Fundamentals of Database Systems (4th Ed) By: Elmasri and Navathe
2. Database System Concepts (4th Ed) By: Korth, Sudarshan, Silberschatz
3. Practical PostgreSQL O'REILLY
4. Beginning Databases with PostgreSQL, From Novice to Professional, 2nd Edition By Richard Stones , Neil Matthew, Apress

## CS-223 : Data structures Practicals and C++ Practicals

(semester 1)

### Objective:-

1. Design and implement Data structures and related algorithms
2. Understand several ways of solving the same problem.

### S.Y.B.Sc.(Computer Science) : Paper III : Data Structures using C Assignments

No	Topic	Lectures
1	Sorting Algorithms – Bubble sort, Insertion	4
2	Recursive Sorting Algorithms – Quick sort , Merge Sort	4
3	Searching Method-Linear search, Binary search	4
4	Static/Dynamic stack implementation, infix to postfix, infix to prefix and evaluation of Postfix.	8
5	Static and Dynamic Queue Implementation – Linear Queue, Circular queue	8
6	Dynamic implementation of Singly Linked List, Doubly Linked List and Circular Linked List.	8
7	Polynomial addition (Using Linked list).	4
8	Binary Search Tree Traversal: Create, add, delete, and display nodes.	8
9	Adjacency matrix to adjacency list conversion, in degree, out degree	4
10	Graph: DFS, BFS.	4

## CS-224:Database Practicals & Mini Project using Software Engineering techniques (Semester 1)

**Title:** Database Assignments and Mini Project using Software Engineering techniques

**Objective:-**

- Understanding the use of cursors, triggers, views and stored procedures
- Understanding the steps of system analysis and design
- Understanding Data requirements for a specific problem domain
- Designing Data base as per the Data requirements
- Designing queries as per the functional requirements

No	Topic	Lectures
1	Simple Queries	4
2	Nested Queries, using aggregate functions	4
3	Queries using Views	8
4	Queries using loops and conditional statements	8
5	Stored Function	12
6	Exception Handling	4
7	Cursors and Triggers	12

**S.Y.B.Sc. Computer Science Theory Paper I**  
**Semester II**  
**CS 221 -Object Oriented Concepts using C++**

**Total Lectures: 48**

**Objective:-**

1. Acquire an understanding of basic object oriented concepts and the issues involved in effective class design
2. Write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc.

**Prerequisites:** Knowledge of C Programming Language

**1. Object oriented concepts [2]**

- 1.1 Object oriented concepts
- 1.2 Features, advantages and Applications of OOPS

**2. Introduction to C++ [6]**

- 2.1 Data types, new operators and keywords, using namespace concept
- 2.2 Simple C++ Program
- 2.3 Introduction to Reference variables
- 2.4 Usage of 'this' pointer
- 2.5 Classes and Objects
- 2.6 Access specifiers
- 2.7 Defining Data members and Member functions
- 2.8 Array of objects

**3. Function in C++ [8]**

- 3.1 Call by reference, Return by reference
- 3.2 Function overloading and default arguments
- 3.3 Inline function
- 3.4 Static class members
- 3.5 Friend Concept – Function, Class

**4. Constructors and destructor [4]**

- 4.1 Types of constructors
- 4.2 Memory allocation (new and delete)
- 4.3 Destructor

## **5. Operator overloading [4]**

- 5.1 Overloading Unary and Binary operators
- 5.2 Overloading using friend function
- 5.3 Type casting and Type conversion

## **6. Inheritance [8]**

- 6.1 Types of inheritance with examples
- 6.2 Constructors and destructor in derived classes
- 6.3 Virtual base classes, Virtual functions and Pure virtual function
- 6.4 Abstract base classes

## **7. Managing Input and Output using C++ [4]**

- 7.1 Managing console I/O
- 7.2 C++ stream classes
- 7.3 Formatted and unformatted console I/O
- 7.4 Usage of manipulators

## **8. Working with files [6]**

- 8.1 File operations – Text files, Binary files
- 8.2 File stream class and methods
- 8.3 File updation with random access
- 8.4 Overloading insertion and extraction operator

## **9. Templates [4]**

- 9.1 Introduction to templates
- 9.2 Class templates, function templates and overloading of function templates
- 9.3 Templates with multiple parameters

## **10. Exception Handling in C++ [2]**

- 10.1 try, catch and throw primitives

### **Reference Books: -**

- 1. Object Oriented Programming with C++ by Robert Lafore
- 2. Object Oriented Programming with C++ by E. Balagurusamy
- 3. Object Oriented Modeling and Design by James Rumbough
- 4. The Complete Reference C++ by Herbert Schildt
- 5. Let us C++ by – YashwantKanitkar
- 6. Mastering C++ by Venugopal, T Ravishankar, RajkumarTHM Pub.
- 7. Trouble free C++ by HarimohanPande, ANE publication

**S.Y.B.Sc.Computer Science Theory paper-II**

**Semester – II**

**CS - 222: Software Engineering**

**Total Lectures : 48**

**Objectives:-**

- To teach basics of System Analysis and Design.
- To teach principles of Software Engineering
- To teach various process models used in practice
- To know about the system engineering and requirement engineering
- To build analysis model

**Prerequisites:** Basic knowledge of DBMS

**1. System Concepts [5] ( R1 : Chapter 1 & R3 : Chapter 1 )**

1.1 System Definition

1.2 Characteristics of a System : Organization, Subsystem, Interaction, Interdependence, Integration, Central objective, Standards, Black-box

1.3 Elements of a system : Outputs, Inputs, Processor(s), Control, Feedback, Environment, Boundaries, Interface.

1.4 Types of Systems : Physical & Abstract Systems, Open & Closed Systems, Computer-based Systems (MIS : Management Information System & DSS : Decision Support System)

**2. Software and Software Engineering [5] ( R2 : Chapter 1 )**

2.1 The Nature of Software

2.1.1 Defining Software

2.1.2 Software Application Domains

2.1.3 Legacy Software

2.2 Software Engineering

2.3 The Software Process

- 2.4 Software Engineering Practice**
  - 2.4.1 The Essence of Practice**
  - 2.4.2 General Principles**
- 2.5 Software Myths**
- 3. System Development Life Cycle (SDLC) [8] ( R3 : Chapter 1 )**
  - 3.1 Introduction**
  - 3.2 Activities of SDLC**
    - 3.2.1 Preliminary Investigation (Request Clarification, Feasibility Study, Request Approval)**
    - 3.2.2 Determination of System Requirements**
    - 3.2.3 Design of System**
    - 3.2.4 Development of Software**
    - 3.2.5 System Testing ( Unit Testing, Integration testing, System Testing)**
    - 3.2.6 System Implementation & Evaluation**
    - 3.2.7 System Maintenance**
- 4. Process Models [6] ( R2 : Chapter 2 )**
  - 4.1 A Generic Process Model**
  - 4.2 Prescriptive Process Models**
    - 4.2.1 The Waterfall Model**
    - 4.2.2 Incremental Process Models**
    - 4.2.3 Evolutionary Process Models**
      - 4.2.3.1 Prototyping**
      - 4.2.3.2 Spiral Model**
    - 4.2.4 Concurrent Models**
- 5. Requirements Engineering [8] ( R2 : Chapter 5 )**
  - 5.1 Introduction**
  - 5.2 Requirements Engineering Tasks**

- 5.2.1 Inception
- 5.2.2 Elicitation
- 5.2.3 Elaboration
- 5.2.4 Negotiation
- 5.2.5 Specification
- 5.2.6 Validation
- 5.2.7 Requirements Management
- 5.3 Initiating the Requirements Engineering Process
  - 5.3.1 Identifying the Stakeholders
  - 5.3.2 Recognizing Multiple Viewpoints
  - 5.3.3 Working toward Collaboration
- 5.4 Fact Finding Techniques ( **R3 : Chapter 3** )
  - 5.4.1 Interview
  - 5.4.2 Questionnaire
  - 5.4.3 Record Review
  - 5.4.4 Observation
- 6. Structured Analysis Development Strategy [10] ( R3 : Chapter 4 )**
  - 6.1 Structured Analysis
    - 6.1.1 What is Structured Analysis?
    - 6.1.2 Components of Structured Analysis
    - 6.1.3 What is Data Flow Analysis?
  - 6.2 Features & Tools of Data Flow Analysis
    - 6.2.1 Logical Data Flow Diagram ( Logical DFD )
      - 6.2.1.1 Notations
      - 6.2.1.2 Drawing a Context Diagram
      - 6.2.1.3 Exploding A Context diagram into Greater detail (1<sup>st</sup> level, 2<sup>nd</sup> Level DFD etc...)



#### **6.2.1.4 Evaluating Data Flow Diagram for Correctness**

### **6.2.2 A Data Dictionary**

#### **6.2.2.1 What is a Data Dictionary?**

#### **6.2.2.2 Why is a Data Dictionary Important?**

#### **6.2.2.3 What does a Data Dictionary Record?**

## **7. An Agile View of Process [6] ( R2 : Chapter 3)**

### **7.1 What is an Agility?**

### **7.2 What is an Agile Process?**

#### **7.2.1 The Politics of Agile Development**

#### **7.2.2 Human Factors**

### **7.3 Agile Process Models**

#### **7.3.1 Extreme Programming (XP)**

#### **7.3.2 Adaptive Software Development (ASD)**

#### **7.3.3 Dynamic Systems Development Method (DSDM)**

### **Reference Books :**

R1 : System Analysis and Design (Second Edition) by Elias M. Awad, Galgotia Publications Pvt. Ltd.

R2 : Software Engineering : A Practitioner's Approach (Seventh Edition) by Roger S. Pressman, McGraw Hill International Edition.

R3 : Analysis and Design of Information Systems (Second Edition) by James A. Senn, McGraw Hill International Editions.

## **CS-223 : Data structures Practicals and C++ Practicals**

**(semester 2)**

### **C++ Lab Assignments**

1	Class , Object and methods implementation	4
2	Constructor: Copy Constructor, Default Constructor, Parameterized Constructor	4
3	Memory Allocation: new and delete operators , dynamic constructor	4
4	Inline function, friend function, default argument,	4
5	Function Overloading.	4
6	Operator overloading.	8
7	Inheritance: Single, multiple, multilevel, hierarchy, Constructor and destructor in derived class	12
8	File Handling: Updation of files using random access	4

**CS-224: Database Practicals & Mini Project using Software  
Engineering techniques  
(Semester 2)**

No	Topic	Lectures
1	Problem definition , scope	8
2	Feasibility study	4
3	Gathering Data Requirements and Functional Requirement	12
4	ERD	4
5	Designing the normalized Database	8
6	Designing queries related to Functional requirements	12

**University of Pune**  
**S.Y.B.Sc.(Computer Science) Practical Examination**  
**Lab Course I**  
**(Data Structures Using C & Object Oriented Programming Concepts Using C++)**

**Duration: 3 hours**

**Max. Marks: 80**

**Q 1. Data Structures using C**

1. Simple program based on searching / sorting / ADT of Stack, Queue, operations on linked list [15]
2. Program based on applications of stack/queue/linked list, trees / graph [25]

OR

3. Program based on case study involving multiple data structures [40]

**Q 2. Object Oriented Concepts and Programming in C++**

1. Program based on different concepts in C++ [30]

OR

2. Program based on different concepts in C++ [30]
3. Viva [10]

**University of Pune**

**Three Year Degree Course in  
B. Sc. Computer Science**

## 1) Title of the Course : B. Sc. Computer Science

### F.Y.B.Sc. Computer Science Syllabus (To be implemented from Academic Year 2013-14)

#### 2) Preamble:

B. Sc. Computer Science is a systematically designed three year course that prepares the student for a career in Software Industry. The syllabus of computer Science subject along with that of the three allied subjects (Mathematics, Electronics and Statistics) forms the required basics for pursuing higher studies in Computer Science. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

#### 3) Introduction:

At **first year of under-graduation** basic foundation of two important skills required for software development is laid. A course in programming and a course in database fundamentals forms the preliminary skill set for solving computational problems. Simultaneously two practical courses are designed to supplement the theoretical training. The second practical course also includes a preliminary preparation for website designing in the form of HTML programming.

Alongwith Computer Science two theory and one practical course each in Statistics, Mathematics and Electronics help in building a strong foundation.

At **second year under-graduation**: The programming skills are further strengthened by a course in Data structures and Object oriented programming. The advanced topics in Databases and preliminary software engineering form the second course. Two practical courses alongside help in hands-on training. Students also undertake a mini project using software engineering principles to solve a real world problem. Simultaneously two theory and one practical course each in Mathematics and Electronics help in strengthening problem solving abilities.

At **third year under-graduation**: Six theory papers in each semester and practical courses cover the entire spectrum of topics necessary to build knowledge base and requisite skill set. Third practical course also includes project work which gives students hands on experience in solving a real world problem.

#### Objectives:

- To develop problem solving abilities using a computer
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To imbibe quality software development practices. To create awareness about process and product standards
- To train students in professional skills related to Software Industry.
- To prepare necessary knowledge base for research and development in Computer Science
- To help students build-up a successful career in Computer Science

#### 4) Eligibility:

Higher Secondary School Certificate (10+2) Science stream or its equivalent Examination as per the University of Pune eligibility norms.

**Note:** Admissions will be given as per the selection procedure / policies adopted by the respective college, in accordance with conditions laid down by the University of Pune. Reservation and relaxation will be as per the Government rules.

**5 A) Examination Pattern:****First Year B. Sc. Computer Science****Subject : Computer Science**

Pattern of Examination: Annual

Theory courses (CS-101): Annual

(CS-102): Annual

Practical Course (CS-103): Annual

(CS-104): Annual

Paper/ Course No.	Title	Total Number of lectures/practicals per Term	Standard of passing		
			Internal marks out of <b>20</b>	External marks out of <b>80</b>	Total marks out of <b>100</b>
Computer Science Paper I (CS-101)	Problem Solving Using Computers and 'C' Programmin g	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Paper II CS-102)	File Organizatio n and Fundament al of Databases	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Practical Paper I (CS-103)	Computer Science Practical Paper I	25 Practical slots of 4 lectures each	08	32	40 *
Computer Science Practical Paper II (CS-104)	Computer Science Practical Paper II	25 Practical slots of 4 lectures each	08	32	40 *

\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory (100 + 100 ) = 200 marks
2. Total marks per year 200 (Theory) + 100 marks (practical)+ Grade(practical) = 300 marks +Grade
3. Internal marks for theory papers given on the basis of internal assessment tests and for practicals on continuous assessment of lab work.
4. In case of Computer Science Practical Paper II, marks out of 100 will be converted to grades

Marks	Grade
75 and above	O

65 and above	A
55 and above	B
50 and above	C
45 and above	D
40 and above	E
Below 40 ( indicates Failure)	F

**Theory examination** will be of three hours duration for each theory course. There shall be 5 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	8 sub-questions, each of 2 marks; answerable in 2 -3 lines and based on entire syllabus
Question 2, 3 ,4 and 5	4 out of 5/6– short answer type questions; answerable in 8 – 10 lines ; mix of theory and problems

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain). There shall be 20 questions.

Practical: Continuous assessment of Lab work and mini project.

**Practical Examination:** Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of 3 hours duration for each practical course. Certified journal is compulsory to appear for practical examination. There shall be two expert and two examiners per batch for the practical examination.

### Second Year B. Sc. Computer Science

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-211:Data Structures using 'C'	CS-221:Object Oriented Concepts using C++
2	Computer Science Paper II	CS-212: Relational Database Management System	CS-222:Software Engineering
3	Computer Science Paper III	CS-223:Data structures Practicals and C++ Practicals	
4	Computer Science Paper IV	CS-224:Database Practicals & Mini Project using Software Engineering techniques	



5	Mathematics Paper I	MT-211:Mathematics Paper I-Sem I	MT-221:Mathematics Paper I-Sem II
6	Mathematics Paper II	MT-212:Mathematics Paper II-Sem I	MT-222:Mathematics Paper II-Sem II
7	Mathematics Paper III	MT-223:Practical Course in Mathematics	
8	Electronics Paper I	EL-211:Electronics Paper I-Sem I	EL-221:Electronics Paper I-Sem II
9	Electronics Paper II	EL-212:Electronics Paper II-Sem I	EL-222:Electronics Paper II-Sem II
10	Electronics Paper III	EL-223:Practical Course in Electronics	
11	English	EN-211:Technical English-Sem I	EN-221:Technical English – Sem II

Pattern of examination: Semester

Theory courses (Sem I: CS-211 and CS212): Semester  
 (Sem II: CS-221 and CS-222): Semester  
 Practical Course (CS-223 and CS-224): Annual

Paper/ Course No.	Title	Total Number of lectures/practicals Per Semester	Standard of passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
Theory Paper I (CS- 211)	Data Structures using 'C'	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper II (CS 212)	Relational Database Management System	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper I (CS 221)	Object Oriented Concepts using C++	Four lectures/Week (Total 48 per Semester )	04	16	20 *
Theory Paper II (CS 222)	Software Engineering	Four lectures/Week (Total 48 per Semester )	04	16	20 *

		Semester )			
Practical paper I (CS 223) (First & Second Semester)	Data structures Practicals and C++ Practicals	Practicals of 4 lectures each 25 practicals / year)	08	32	40 **
Practical paper II (CS 223) (First & Second Semester)	Database Practicals & Mini Project using Software Engineeri ng technique s	Practicals of 4 lectures each 25 practicals / year)	08	32	40 **

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 + 50 ) = 100 marks
2. Total marks per year 200 (Theory) + 100 marks (practicals)+Grade(practical) = 300 marks+Grade
3. Internal marks for theory papers given on the basis of Continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 questions, each of 1 marks	10 marks
Question 2 3	Sub-questions carrying 5 marks (2 out of 3)	10 marks each
Question 4	Sub-questions carrying marks depending on their complexity with options	10 marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Certified journal is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

### Third Year B. Sc. Electronic Science

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-331: System Programming	CS-341: Operating System
2	Computer Science Paper II	CS-332: Theoretical Computer Science	CS-342: Compiler Construction
3	Computer Science Paper III	CS-333: Computer Networks-I	CS-343: Computer Networks-II
4	Computer Science Paper IV	CS-334: Internet Programming- I	CS-344: Internet Programming- II
5	Computer Science Paper V	CS-335: Programming in Java-I	CS-345: Programming in Java-II
6	Computer Science Paper VI	CS-336: Object Oriented Software Engineering	CS-346: Computer Graphics
7	Computer Science Paper VII	CS-347: Practicals Based on CS-331 and CS341 – Sem I & Sem II	
8	Computer Science Paper VIII	CS-348: Practicals Based on CS-335 and CS-344 – Sem I & Sem II and Computer Graphics using Java	
9	Computer Science Paper IX	CS-349: Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	

### Subject : Computer Science

Pattern of examination: Semester

Theory courses:

(Sem III: CS-331-CS-336): Semester (Sem IV: CS-341-CS-346): Semester

Practical Course:

(CS-347-CS-349): Annual

Theory Papers					
Paper/Course No.	Title	Total Number of lectures Per Semester	Standard of passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
<b>SEM III</b>					
CS-331	System Programming	48	4	16	20*

CS-332	Theoretical Computer Science	48	4	16	20*
CS-333	Computer Networks-I	48	4	16	20*
CS-334	Internet Programming- I	48	4	16	20*
CS-335	Programming in Java-I	48	4	16	20*
CS-336	Object Oriented Software Engineering	48	4	16	20*
<b>SEM IV</b>					
CS-341	Operating System	48	4	16	20*
CS-342	Compiler Construction	48	4	16	20*
CS-343	Computer Networks-II	48	4	16	20*
CS-344	Internet Programming- I	48	4	16	20*
CS-345	Programming in Java-I	48	4	16	20*
CS-346	Computer Graphics	48	4	16	20*
<b>Practical Papers</b>					
CS 347 (Semester III & IV)	Practicals Based on CS-331 and CS-341 – Sem I & Sem II	25 practicals/ year	08	32	40 **
CS 348 (Semester III & IV)	CS-348:Practicals Based on CS-335 and Cs-344 – Sem I & Sem II and Computer Graphics using Java	25 practicals/ year	08	32	40 **

CS 349 (Semester III & IV)	CS-349:Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	25 practicals/ year	08	32	40 **
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\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester ( $50 \times 6$ ) = 300 marks
2. Total marks per year 600 (Theory) + 300 marks (practicals) = 900 marks
3. Internal marks for theory papers given on the basis of continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 questions, each of 1 marks	10 marks
Question 2 and 3	Sub-questions carrying 5 marks (2 out of 3)	10 marks each
Question 4	Sub-questions carrying marks depending on their complexity with options	10 marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: one internal assessment test + practical journals + attendance + activity.

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Certified journal is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

### 5 B) Standard of Passing:

- i. In order to pass in the first year theory examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Theory Examination.)
- ii. In order to pass in the Second Year and Third Year theory examination, the candidate has to obtain 20 marks out of 50 in each course of each semester.

(Minimum 16 marks out of 40 must be obtained in the University Theory Examination.)

- iii. In order to pass in practical examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Examination.)

#### 5 C) ATKT Rules:

While going from F.Y.B.Sc. to S.Y.B.Sc. at least 8 courses (out of total 13) should be passed; however all F.Y.B.Sc. courses should be passed while going to T.Y.B.Sc. While going from S.Y.B.Sc. to T.Y.B.Sc., at least 12 courses (out of 22) should be passed (Practical Course at S.Y.B.Sc. will be equivalent to 2 courses).

#### 5 D) Award of Class:

The class will be awarded to the student on the aggregate marks obtained during the second and third year in the principal subject only. The award of the class shall be as follows:

1	Aggregate 70% and above	First Class with Distinction
2	Aggregate 60% and more but less than 70%	First Class
3	Aggregate 55% and more but less than 60%	Higher Second Class
4	Aggregate 50% and more but less than 55%	Second Class
5	Aggregate 40% and more but less than 50%	Pass Class
6	Below 40%	Fail

**5 E) External Students:** There shall be no external students.

#### 5 F) Setting question papers:

**F.Y.B.Sc.:** For theory papers I and II annual question papers shall be set by the University of Pune and assessment done at the respective colleges. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers, the Question paper slips will be provided by the University of Pune and assessment done at the respective colleges.

**S.Y.B.Sc. and T.Y.B.Sc.:** For theory papers I and II for each semester and also for the annual practical examination question papers set by the University of Pune. Centralized assessment for theory papers done as per the University instructions. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers: Papers shall be set by the University of Pune and assessment done by the internal examiner and external examiner appointed by University of Pune.

**5G) Verification and Revaluation Rules:**

As per university Statues and rules for verification and revaluation of marks in stipulated time after declaration of the semester examination result.

**6) Course Structure:**

**Duration:** The duration of B.Sc. Computer Science Degree Program shall be three years.

**a) All are Compulsory Papers:**

F.Y.B.Sc. : 2 Theory + 2 Practical (Annual)

S .Y.B.Sc.: 2 Theory per semester + 2 Practical (Annual)

T.Y.B.Sc.: 6 Theory per semester + 3 Practical (Annual)

**b) Question Papers :****F.Y.B.Sc.Theory paper:**

University Examination – 80 marks (at the end of 2<sup>nd</sup> term)

Internal Examination – 20 marks

**S.Y / T.Y. - B.Sc.Theory paper:**

University Examination – 40 marks (at the end of each term)

Internal Examination – 10 marks

**F.Y. / S.Y / T.Y. - B.Sc.Practical Paper:**

University Examination – 80 marks (at the end of 2<sup>nd</sup> term)

Internal Examination – 20 marks

**c) Medium of Instruction:** The medium of instruction for the course shall be **English.**

**7) Equivalence of Previous Syllabus:**

<b>Old Course (2008 Pattern)</b>	<b>New Course (2013 Pattern)</b>
Paper I: Introduction to Computers and 'C' Programming	CS-101:Problem Solving Using Computers and 'C' Programming
Paper II: File Organization and Fundamental of Databases	CS 102:File Organization and Fundamental of Databases
Paper III: Computer Science Practical paper I	CS-103: Computer Science Practical paper I
Paper IV: Computer Science Practical paper II	CS-104: Computer Science Practical paper II

**8) University Terms:** Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 75 percent attendance at theory and practical course and satisfactory performance during the term.

**9) Qualification of Teachers:**M.Sc. Computer Science/M.C.A. or equivalent master degree in science with class/grades and NET/SET as per prevailing University/Government /UGC rules.

**10) Detail Syllabus with Recommended Books:**

**Title :** Problem Solving Using Computers and 'C' Programming

**Objective :-**

- i) To develop Problem Solving abilities using computers
- ii) To teach basic principles of programming
- iii) To develop skills for writing programs using 'C'

**Syllabus****Chapter 1 Problem Solving using Computers****[8]**

- 1.1 Problem-Solving
- 1.2 Writing Simple Algorithms
- 1.3 Algorithms
- 1.4 Flowcharts

**Chapter 2 Programming Languages as Tools****[3]**

- 2.1 Machine language R6(1.5,1.6)
- 2.2 Assembly language
- 2.3 High level languages
- 2.4 Compilers and Interpreters

**Chapter 3 Introduction to C****[2]**

- 3.1 History R3(2-1), R6(1.1)
- 3.2 Structure of a C program R3(2-2), R6(1.8)
- 3.3 Functions as building blocks R3(4-1,4-2)
- 3.4 Application Areas
- 3.5 C Program development life cycle R6(1.10)
- 3.6 Sample programs

**Chapter 4 C Tokens****[12]**

- 4.1 Keywords R6 (Ch 2, 3)
- 4.2 Identifiers
- 4.3 Variables
- 4.4 Constants – character, integer, float, string, escape sequences
- 4.5 Data types – built-in and user defined
- 4.6 Operators and Expressions Operator types (arithmetic, relational, logical, assignment, bitwise, conditional , other operators) , precedence and associativity rules.
- 4.7 Simple programs using printf and scanf

**Chapter 5 Input and Output****[3]**

- 5.1 Character input and output R6(4.2 - 4.5)
- 5.2 String input and output
- 5.3 Formatted input and output

**Chapter 6 Control Structures****[10]**

- 6.1 Decision making structures If, if-else, switch R3(5-2, 5-3), R6(5.2 - 5.8)
- 6.2 Loop Control structures While, do-while, for R6 (Ch 8)
- 6.3 Nested structures
- 6.4 break and continue



<b>Chapter 7 Functions in C</b>		<b>[8]</b>
7.1 What is a function	R3(4-2, 4-4)	
7.2 Advantages of Functions		
7.3 Standard library functions	R3(5-4)	
7.4 User defined functions :Declaration, definition, function call, parameter passing (by value), return keyword,	R6 (Ch 9)	
7.5 Scope of variables, storage classes		
7.6 Recursion	R3 (6-9)	
<b>Chapter 8 Arrays</b>		<b>[8]</b>
8.1 Array declaration, initialization	R6(Ch 7)	
8.2 Types – one, two and multidimensional	“	
8.3 Passing arrays to functions	R3(8-3), R6(9.17)	
<b>Chapter 9 Pointers</b>		<b>[6]</b>
9.1 Pointer declaration, initialization	R6(11.1 - 11.14)	
9.2 Dereferencing pointers		
9.3 Pointer arithmetic		
9.4 Pointer to pointer		
9.5 Arrays and pointers		
9.6 Functions and pointers – passing pointers to functions, function returning pointers		
9.7 Dynamic memory allocation	R6(13.1-13.6)	
<b>Chapter 10 Strings</b>		<b>[6]</b>
10.1 Declaration and initialization, format specifiers	R6(Ch 8)	
10.2 Standard library functions		
10.3 Strings and pointers		
10.4 Array of strings		
10.5 Command Line Arguments	R3(Appendix I1-I2)	
<b>Chapter 11 Structures and Unions</b>		<b>[6]</b>
11.1 Creating structures	R6(Ch 10)	
11.2 Accessing structure members (dot Operator)		
11.3 Structure initialization		
11.4 Array of structures		
11.5 Passing structures to functions		
11.6 Nested structures		
11.7 Pointers and structures		
11.8 Unions		
11.9 Difference between structures and unions		
<b>Chapter 12 File Handling</b>		<b>[6]</b>
12.1 Streams	R3(7-1, 7-2)	
12.2 Types of Files		
12.3 Operations on files	R6(12.1- 12.4), 12.6, 12.7	
12.4 Random access to files		
<b>Chapter 13 C Preprocessor</b>		<b>[2]</b>

- 13.1 Format of Preprocessor directive R6(14.1 - 14.3)  
 13.2 File Inclusion directive  
 13.3 Macro substitution, nested macro, argumented macro

### References

1. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, ISBN:9788120305960, PHI Learning
2. How to Solve it by Computer, R.G. Dromey, ISBN:9788131705629, Pearson Education
3. A Structured Programming Approach Using C, Behrouz A. Forouzan, Richard F. Gilberg ISBN:9788131500941, Cengage Learning India
4. Using The GNU Compiler Collection, Richard M. Stallman;The GCC Developer Community Pothi.com
5. Using the Gnu Compiler Collection, Richard M. Stallman, Gcc Developer community ISBN:9781441412768,Createspace
6. Programming in ANSI C, E. Balaguruswamy,ISBN:9781259004612,Tata Mc-Graw Hill Publishing Co.Ltd.-New Delhi

**Computer Science: Paper – II : File Organization and Fundamental of Databases**

**Title :** File Organization and Fundamental of Databases

### Objective :-

- i) To understand data processing using computers
- ii) To teach basic organization of data using files
- iii) To understand creations, manipulation and querying of data in databases

### Syllabus

**Chapter 1 File Organization R3**  
**[6]**

- 1.1 Introduction
- 1.2 Physical / logical files
- 1.3 Types of file organization ( heap,sorted, indexed,hashed)
- 1.4 Choosing a file organization

**Chapter 2 Introduction of DBMS R1(Ch 1) [6]**

- 2.1 Overview
- 2.2 File system Vs DBMS
- 2.3 Describing & storing data (Data models (relational,hierarchical, network))
- 2.4 Levels of abstraction
- 2.5 Data independence
- 2.6 Structure of DBMS
- 2.7 Users of DBMS
- 2.8 Advantages of DBMS

**Chapter 3 Conceptual Design (E-R model) R1(Ch 2), R3, R4  
[15]**

- 3.1 Overview of DB design
- 3.2 ER data model (entities , attributes, entity sets, relations, relationship sets)
- 3.3 Additional constraints (Key constraints, Mapping constraints, Strong & Weak entities, aggregation / generalization)
- 3.4 Conceptual design using ER modelling ( entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER)
- 3.5 Case studies

**Chapter 4 Relational data model R1(Ch 3)  
[6]**

- 4.1 Structure of Relational Databases (concepts of a table, a row, a relation, a Tuple and a key in a relational database)
- 4.2 Conversion of ER to Relational model
- 4.3 Integrity constraints ( primary key, referential integrity, unique constraint, Null constraint, Check constraint)

**Chapter 5 Relational algebra R1(Ch 3)  
[7]**

- 5.1 Preliminaries
- 5.2 Relational algebra ( selection, projection, set operations, renaming joins, division)

**Chapter 6 SQL R1(Ch 4)  
[20]**

- 6.1 Introduction
- 6.2 Basic structure
- 6.3 Set operations
- 6.4 Aggregate functions
- 6.5 Null values
- 6.6 Nested Subqueries
- 6.7 Modifications to Database
- 6.8 DDL commands with examples
- 6.9 SQL mechanisms for joining relations (inner joins, outer joins and their types)
- 6.10 Examples on SQL (case studies )

**7 Relational Database Design R1(ch 7)  
[20]**

- 7.1 Pitfalls in Relational-Database Design ( undesirable properties of a RDB design like repetition, inability to represent certain information),
- 7.2 Functional dependencies ( Basic concepts, F+, Closure of an Attribute set, Concept of a Super Key and a primary key)

- (Algorithm to derive a Primary Key for a relation)
- 7.3 Concept of Decomposition
  - 7.4 Desirable Properties of Decomposition ( Lossless join & Dependency preservation)
  - 7.5 Concept of Normalization
  - 7.6 Normal forms (only definitions) 1NF, 2NF, 3NF, BCNF
  - 7.7 Examples on Normalization

### References

1. Database System Concepts, Henry F. Korth, Abraham Silberschatz, S. Sudarshan,  
ISBN:9780071289597, Tata McGraw-Hill Education
2. Database Management Systems ,Raghu Ramakrishnan,ISBN:9780071254342,  
Mcgraw-hill higher Education
3. Database Management Systems,Raghu Ramakrishnan and Johannes Gehrke,  
McGraw-Hill Science/Engineering/Math; 3 edition, ISBN: 9780072465631
4. Database Systems, Shamkant B. Navathe, Ramez Elmasri,  
ISBN:9780132144988,  
PEARSON HIGHER EDUCATION
5. Beginning Databases with PostgreSQL: From Novice to Professional,  
Richard Stones,  
Neil Matthew, ISBN:9781590594780, Apress
6. PostgreSQL, Korry Douglas, ISBN:9780672327568, Sams
7. Practical PostgreSQL (B/CD),John Worsley, Joshua Drake,  
ISBN:9788173663925  
Shroff/O'reilly
8. Practical Postgresql , By Joshua D. Drake, John C Worsley (**O'Reilly publications**)
9. "An introduction to Database systems", Bipin C Desai, Galgotia Publications

**Important to Note:** It is absolutely necessary and essential that all the practicals for Paper III and Paper IV be conducted on Open Source Operating System like Linux. All the practicals related to C needs to be conducted using GCC compiler.

Paper III – Computer Science Practical Paper I
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**Title :** Basic 'C' Programming and Database Handling practicals

**Objective :-**

- i) Design and implement a 'C' programs for simple problems
- ii) Understand appropriate use of data types and array structures
- iii) Understand use of appropriate control structures

**Syllabus**

1. Initial 3 practical slots (12 lectures) should be used for teaching basic operating systems commands and use of editors

2. Last 2 slots (8 lectures) are to be used for revision
3. Remaining 80 lectures are to be utilised for the following 20 Assignments

<b>Computer Science : Paper III : Basic 'C' Programming and Database Handling practicals#</b>		
No	Topic	Lectures
1	Assignment to demonstrate use of data types, simple operators (expressions)	4
2	Assignment to demonstrate decision making statements (if and if-else, nested structures)	4
3	Assignment to demonstrate decision making statements (switch case)	4
4	Assignment to demonstrate use of simple loops	4
5	Assignment to demonstrate use of nested loops	4
6	Assignment to demonstrate menu driven programs.	4
7	Assignment to demonstrate writing C programs in modular way ( use of user defined functions)	4
8	Assignment to demonstrate recursive functions.	4
9	Assignment to demonstrate use of arrays (1-d arrays ) and functions	4
10	Assignment to demonstrate use of multidimensional array(2-d arrays ) and functions	4
11	Assignment to create simple tables , with only the primary key constraint ( as a table level constraint & as a field level constraint) (include all data types)	4
12	Assignment to create more than one table, with referential integrity constraint, PK constraint.	4
13	Assignment to create one or more tables with following constraints, in addition to the first two constraints (PK & FK) a. Check constraint b. Unique constraint c. Not null constraint	4
14	Assignment to drop a table from the database, to alter the schema of a table in the Database.	4
15	Assignment to insert / update / delete records using tables created in previous Assignments. ( use simple forms of insert / update / delete statements)	4

16	Assignment to query the tables using simple form of select statement Select <field-list> from table [where <condition> order by <field list>] Select <field-list, aggregate functions > from table [where <condition> group by <> having <> order by <>]	4
17	Assignment to query table, using set operations (union, intersect)	4
18	Assignments to query tables using nested queries	4
19	Assignment to query tables , using nested queries ( use of 'Except', exists, not exists clauses	4
20	Assignment related to small case studies ( Each case study will involve creating tables with specified constraints, inserting records to it & writing queries for extracting records from these tables)	4

#### Paper IV – Computer Science Practical Paper II<sup>#</sup>

**Title :** HTML5 programming and Advanced 'C' Programming practicals

**Objective :-**

- i) Understanding basic HTML designing
- ii) Writing C programs using complex data structures such as pointers, structures etc.

**Syllabus**

1. Initial 3 practical slots (8 lectures) should be used for teaching basic internet usage including use of browsers
2. Last 2 slots (8 lectures) are to be used for revision
- 3. Remaining 80 lectures are to be utilised for the following 20 Assignments**

<b>Computer Science : Paper IV : HTML 5 programming and Advanced 'C' Programming practicals</b>		
No	Topic	Lectures
1	Creating simple HTML pages (use of different tags for changing fonts, foreground and background colors etc.) )	4
2	HTML programming (use of lists, tables )	4
3	HTML programming using frames	4
4	HTML programming using hyperlinks	4
5	HTML programming ( Creation of forms)	4

6	HTML programming – Case Study 1	4
7	HTML programming – Case Study 1	4
8	HTML programming – Case Study 1	4
9	Assignment to demonstrate use of pointers	4
10	Assignment to demonstrate concept of strings ( string & pointers)	4
11	Assignment to demonstrate array of strings.	4
12	Assignment to demonstrate use of bitwise operators.	4
13	Assignment to demonstrate structures (using array and functions )	4
14	Assignment to demonstrate structures and unions	4
15	Assignment to demonstrate command line arguments and preprocessor directives	4
16	Assignment to demonstrate file handling (text files)	4
17	Assignment to demonstrate file handling (binary files and random access to files)	4
18	C Programming – Case study 1	4
19	C Programming – Case study 2	4
20	C programming – Case Study 3	4

#The Lab Hand Book will define in detail the contents and provide guidelines for each practical Assignment.

**Savitribai Phule Pune University**

**Three Year Degree Course in  
B. Sc. Computer Science**



## 1) Title of the Course : B. Sc. Computer Science

### T. Y. B. Sc. Computer Science Syllabus in the Subject Computer Science (To be implemented from Academic Year 2015-16)

#### 2) Preamble:

B. Sc. Computer Science is a systematically designed three year course that prepares the student for a career in Software Industry. The syllabus of Computer Science subject along with that of the three allied subjects (Mathematics, Electronics and Statistics) forms the required basics for pursuing higher studies in Computer Science. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

#### 3) Introduction:

At **first year of under-graduation** basic foundation of two important skills required for software development is laid. A course in programming and a course in database fundamentals forms the preliminary skill set for solving computational problems. Simultaneously two practical courses are designed to supplement the theoretical training. The second practical course also includes a preliminary preparation for website designing in the form of HTML programming.

Along with Computer Science two theories and one practical course each in Statistics, Mathematics and Electronics help in building a strong foundation.

At **second year under-graduation**: The programming skills are further strengthened by a course in Data structures and Object oriented programming. The advanced topics in Databases and preliminary software engineering form the second course. Two practical courses alongside help in hands-on training. Students also undertake a mini project using software engineering principles to solve a real world problem. Simultaneously two theories and one practical course each in Mathematics and Electronics help in strengthening problem solving abilities.

At **third year under-graduation**: Six theory papers in each semester and practical courses cover the entire spectrum of topics necessary to build knowledge base and requisite skill set. Third practical course also includes project work which gives students hands on experience in solving a real world problem.

#### Objectives:

- To develop problem solving abilities using a computer
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To imbibe quality software development practices.
- To create awareness about process and product standards
- To train students in professional skills related to Software Industry.
- To prepare necessary knowledge base for research and development in Computer Science
- To help students build-up a successful career in Computer Science

#### 4) Eligibility:

Higher Secondary School Certificate (10+2) Science with Mathematics or its equivalent Examination as per Savitribai Phule Pune University eligibility norms.

**Note:** Admissions will be given as per the selection procedure / policies adopted by the respective college, in accordance with conditions laid down by Savitribai Phule Pune University. Reservation and relaxation will be as per the Government rules.

### 5 A) Examination Pattern:

#### First Year B. Sc. Computer Science

#### Subject : Computer Science

Pattern of Examination: Annual for both Theory and Practical Courses

Paper/ Course No.	Title	Total Number of lectures/practicals per Term	Standard of passing		
			Internal marks out of 20	External marks out of 80	Total marks out of 100
Computer Science Paper I (CS-101)	Problem Solving Using Computers and 'C' Programmin g	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Paper II CS-102)	File Organizatio n and Fundament al of Databases	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Practical Paper I (CS-103)	Computer Science Practical Paper I	25 Practical slots of 4 lectures each	08	32	40 *
Computer Science Practical Paper II (CS-104)	Computer Science Practical Paper II	25 Practical slots of 4 lectures each	08	32	40 *

\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory (100 + 100 ) = 200 marks
2. Total marks per year 200 (Theory) + 100 marks (practical)+ Grade(practical) = 300 marks +Grade
3. Internal marks for theory papers given on the basis of internal assessment tests and for practicals on continuous assessment of lab work.
4. In case of Computer Science Practical Paper II, marks out of 100 will be converted to grades

Marks	Grade
75 And Above	O
65 And Above	A
55 and above	B
50 And above	C

45 And Above	D
40 And Above	E
Below 40 ( indicates Failure)	F

**Theory examination** will be of three hours duration for each theory course. There shall be 5 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	8 sub-questions, each of 2 marks; answerable in 2 -3 lines and based on entire syllabus
Question 2, 3 ,4 and 5	4 out of 5/6– short answer type questions; answerable in 8 – 10 lines mix of theory and problems

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain). There shall be 20 questions. Practical: Continuous assessment of Lab work and mini project.

**Practical Examination:** Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of 3 hours duration for each practical course. Certified journal is compulsory to appear for practical examination. There shall be two expert and two examiners per batch for the practical examination.

**Second Year B. Sc. (Computer Science)**  
**Subject : Computer Science**

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-211:Data Structures using 'C'	CS-221:Object Oriented Concepts using C++
2	Computer Science Paper II	CS-212: Relational Database Management System	CS-222:Software Engineering
3	Computer Science Paper III	CS-223:Data structures Practicals and C++ Practicals	
4	Computer Science Paper IV	CS-224:Database Practicals & Mini Project using Software Engineering techniques	

**Pattern of examination: Semester**

Theory courses (Sem I: CS-211 and CS212): Semester  
(Sem II: CS-221 and CS-222): Semester  
Practical Course (CS-223 and CS-224): Annual

Paper/Course No.	Title	Total Number of Lectures/Practicals Per Week	Standard Of Passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100

					(practicals)
Theory Paper I (CS-211)	Data Structures using 'C'	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper II (CS-212)	Relational Database Management System	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper I (CS-221)	Object Oriented Concepts using C++	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper II (CS-222)	Software Engineering	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Practical paper I (CS 223) (First & Second Semester)	Data structures Practicals and C++ Practicals	Practicals of 4 lectures each 25 practicals / year)	08	32	40*
Practical paper II (CS 224) (First & Second Semester)	Database Practicals & Mini Project using Software Engineering techniques	Practicals of 4 lectures each 25 practicals / year)	08	32	40**

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 + 50 ) = 100 marks

2. Total marks per year 200 (Theory) + 100 marks (practicals)+Grade(practical) = 300 marks+Grade

3. Internal marks for theory papers given on the basis of Continuous internal Assessment

**Theory examination** will be of two hours duration for each theory course. There

shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 sub-questions, each of 1 mark; answerable in 2 -3 lines and based on entire syllabus	10 Marks
Question 2, 3	Sub-questions carrying 5 marks (2 out of 3)	10 Marks
Question 4	Sub-questions carrying marks depending on their complexity with options	10 Marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Continuous assessment of practical performance should be using a Lab Book specifically designed for the purpose. Certified Lab book is compulsory to appear for practical examination. There is no need of attaching program printouts to the Lab Book. There shall be two experts and two examiners per batch for the practical examination. One of the examiners will be external.

### Third Year B. Sc. (Computer Science)

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-331: System Programming	CS-341: Operating System
2	Computer Science Paper II	CS-332: Theoretical Computer Science	CS-342: Compiler Construction
3	Computer Science Paper III	CS-333: Computer Networks-I	CS-343: Computer Networks-II
4	Computer Science Paper IV	CS-334: Internet Programming- I	CS-344: Internet Programming- II
5	Computer Science Paper V	CS-335: Programming in Java-I	CS-345: Programming in Java-II
6	Computer Science Paper VI	CS-336: Object Oriented Software Engineering	CS-346: Computer Graphics
7	Computer Science Paper VII	CS-347: Practicals Based on CS-331 and CS341 – Sem I & Sem II	
8	Computer Science Paper VIII	CS-348: Practicals Based on CS-335 and CS-344 – Sem I & Sem II and Computer Graphics using Java	
9	Computer Science Paper IX	CS-349: Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	

Pattern of examination: Semester

Theory courses:

(Sem III: CS-331-CS-336): Semester (Sem IV: CS-341-CS-346): Semester

Practical Course:

(CS-347-CS-349): Annual

Theory Papers					
Paper/Course No.	Title	Total Number of Lectures/Practicals Per Week	Standard Of Passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
<b>SEM III</b>					
Theory Paper I (CS-331)	System Programming	48	04	16	20*
Theory Paper II (CS-332)	Theoretical Computer Science	48	04	16	20*
Theory Paper III (CS-333)	Computer Networks-I	48	04	16	20*
Theory Paper IV (CS-334)	Internet Programming I	48	04	16	20*
Theory Paper V (CS-335)	Programming in Java-I	48	04	16	20*
Theory Paper V (CS-336)	Object Oriented Software Engineering	48	04	16	20*
<b>SEM IV</b>					
Theory Paper I (CS-341)	Operating System	48	04	16	20*
Theory Paper II (CS-342)	Compiler Construction	48	04	16	20*
Theory Paper III (CS-343)	Computer Networks-II	48	04	16	20*
Theory Paper IV (CS-344)	Internet Programming II	48	04	16	20*
Theory Paper V	Programmin				

(CS-345)	g in Java-II	48	04	16	20*
Theory Paper V (CS-346)	Computer Graphics	48	04	16	20*
Practical Papers					
Practical paper I CS 347 (Semester III & IV)	Practicals Based on CS-331 and CS-341 – Sem I & Sem II	Practicals of 4 lectures each 25 practicals / year)	08	32	40**
Practical paper II CS 348 (Semester III & IV)	CS-348:Practicals Based on CS-335 and CS-345 – Sem I & Sem II and Computer Graphics using OpenGL	Practicals of 4 lectures each 25 practicals / year)	08	32	40**
Practical paper I CS 349 (Semester III & IV)	CS-349:Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	Practicals of 4 lectures each 25 practicals / year)	08	32	40**

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 x 6 ) = 300 marks
2. Total marks per year 600 (Theory) + 300 marks (practicals) = 900 marks
3. Internal marks for theory papers given on the basis of continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

**Theory examination** will be of two hours duration for each theory course. There

shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 sub-questions, each of 1 mark; answerable in 2 -3 lines and based on entire syllabus	10 Marks
Question 2, 3	Sub-questions carrying 5 marks (2 out of 3)	10 Marks
Question 4	Sub-questions carrying marks depending on their complexity with options	10 Marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Continuous assessment of practical performance should be using a Lab Book specifically designed for the purpose. Certified Lab book is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

**5 B) Standard of Passing:**

i. In order to pass in the first year theory examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Theory Examination.)

ii. In order to pass in the Second Year and Third Year theory examination, the candidate has to obtain 20 marks out of 50 in each course of each semester.

**5 C) ATKT Rules:**

While going from F.Y.B.Sc. to S.Y.B.Sc. at least 8 courses (out of total 13) should be passed; however all F.Y.B.Sc. courses should be passed while going to T.Y.B.Sc. While going from S.Y.B.Sc. to T.Y.B.Sc., at least 12 courses (out of 22) should be passed (Practical Course at S.Y.B.Sc. will be equivalent to 2 courses).

**5 D) Award of Class:**

The class will be awarded to the student on the aggregate marks obtained during the second and third year in the principal subject only. The award of the class shall be as follows:

1	Aggregate 70% and above	First Class with Distinction
2	Aggregate 60% and more but less than 70%	First Class
3	Aggregate 55% and more but less than 60%	Higher Second Class
4	Aggregate 50% and more but less than 55%	Second Class
5	Aggregate 40% and more but less than 50%	Pass Class
6	Below 40%	Fail

**5 E) External Students:** There shall be no external students.

**5 F) Setting question papers:**

**F.Y.B.Sc.:** For theory papers I and II annual question papers shall be set by the University of Pune and assessment done at the respective colleges. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers, the Question paper slips will be provided by the University of Pune and assessment done at the respective colleges.

**S.Y.B.Sc. and T.Y.B.Sc.:** For theory papers I and II for each semester and also for the annual practical examination question papers set by the University of Pune.



Centralized assessment for theory papers done as per the University instructions. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers: Papers shall be set by the University of Pune and assessment done by the internal examiner and external examiner appointed by University of Pune.

**5G) Verification and Revaluation Rules:**

As per university Statues and rules for verification and revaluation of marks in stipulated time after declaration of the semester examination result.

**6) Course Structure:**

**Duration:** The duration of B.Sc. Computer Science Degree Program shall be three years.

**a) All are Compulsory Papers:**

F.Y.B.Sc. : 2 Theory + 2 Practical (Annual)

S .Y.B.Sc.: 2 Theory per semester + 2 Practical (Annual)

T.Y.B.Sc.: 6 Theory per semester + 3 Practical (Annual)

**b) Question Papers :**

**F.Y.B.Sc. Theory paper:**

University Examination – 80 marks (at the end of 2nd term)

Internal Examination – 20 marks

**S.Y / T.Y. - B.Sc.Theory paper:**

University Examination – 40 marks (at the end of each term)

Internal Examination – 10 marks

**F.Y. / S.Y / T.Y. - B.Sc. Practical Paper:**

University Examination – 80 marks (at the end of 2nd term)

Internal Examination – 20 marks

**c) Medium of Instruction:** The medium of instruction for the course shall be **English.**

**7) Equivalence of Previous Syllabus:**

<b>Old Course (2008 Pattern)</b>	<b>New Course (2013 Pattern)</b>
CS 331: System Programming & Operating System I	CS 331 : System Programming
CS 341: System Programming & Operating System II	CS 341 : Operating System
CS 332 : Theoretical Computer Science & Compiler Construction I	CS 332 : Theoretical Computer Science
CS 342 : Theoretical Computer Science & Compiler Construction II	CS 342 : Compiler Construction
CS 333 :Computer Networks I	CS 333 :Computer Networks I
CS 343 :Computer Networks II	CS 343 :Computer Networks II
CS 334 :Web development and PHP programming I	CS 334 :Internet Programming I
CS 344 : Web development and PHP programming II	CS 344 :Internet Programming II
CS 335 :Programming in Java I	CS 335 :Programming in Java I
CS 345 :Programming in Java II	CS 345 :Programming in Java II
CS 336 :Object Oriented Software Engineering	CS 336 :Object Oriented Software Engineering

CS 346 :Business Applications	CS 346 :Computer Graphics
CS 347: Lab Course I	CS 347: Lab Course I
CS 348:Lab Course II	CS 348:Lab Course II
CS 349: Lab Course III	CS 349: Lab Course III

**8) University Terms:** Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 75 percent attendance at theory and practical course and satisfactory performance during the term.

**9) Qualification of Teachers:** M.Sc. Computer Science/M.C.A. or equivalent master degree in science with class/grades and NET/SET as per prevailing University/Government /UGC rules.

**10) Detail Syllabus with Recommended Books:**

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Systems Programming**  
**Code No. : CS-331**

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**Semester III**

**Total Lectures : 48**

**Aim :** To understand the design and implementation issues of System programs that play an important role in program development.

**Objectives :**

- To understand the design structure of a simple editor.
- To understand the design structure of Assembler and macro processor for an hypothetical simulated computer.
- To understand the working of linkers and loaders and other development utilities.
- To understand Complexity of Operating system as a software.

**1. Introduction**

**[4]**

- 1.1. Types of program – System program and Application program.
- 1.2. Difference between system programming and application programming.
- 1.3. Elements of Programming environment - Editor, Preprocessor, Assembler, Compiler, Interpreter, Linker and Loader, Debugger, Device drivers, Operating System.
- 1.4. Simulation of simple computer smac0 (hypothetical computer) -Memory, Registers, Condition Codes, Instruction format, Instruction Set, smac0 programs.

**2. Editors**

**[2]**

- 2.1 Definition, need/purpose of editor.
- 2.2 Types of editor- Examples ed, sed, VIM & emacs
- 2.3 Structure of editor

**3. Assembler**

**[10]**

- 3.1 Definition.
- 3.2 Features of assembly language, advantages
- 3.3 Statement format, types of statements – Imperative, Declarative, Assembler Directive.
- 3.4 Constants and Literals.
- 3.5 Advanced assembler directives (LTORG, ORIGIN, EQU),
- 3.6 Design of assembler – Analysis Phase and Synthesis Phase.
- 3.7 Overview of assembling process
- 3.8 Pass Structure of Assembler – One pass, Two pass assembler.
- 3.9 Problems of 1-pass assembler - forward reference, efficiency, Table of Incomplete Instructions.
- 3.10 Design of 2-pass Assembler – Pass-I and Pass-II
- 3.11 Data structure of 2-pass assembler.
- 3.12. Intermediate Code – Need, Forms-variant I and Variant II

**4. Macros and Macro Processors**

**[10]**

- 4.1 Definition
- 4.2 Macro definition and call
- 4.3 Macro expansion – positional and keyword parameters
- 4.4 Design of Data structures to be used for Macro definition and use
- 4.5 Nested macro calls
- 4.6 Advanced macro facilities – alteration of flow of control during expansion, expansion time variable, conditional expansion, expansion time loops. (with examples)
- 4.7 Design of macro preprocessor – Design overview, data structure, processing of macro definition and macro expansion (Except algorithms)

4.8 Macro assembler – Comparison of macro preprocessor and macro assembler. Pass structure of macro assembler.

**5. Compiler Design options** [2]

5.1 Interpreter - Use of interpreter, definition, Comparison with compiler, Overview of interpretation, Pure and impure interpreter.

5.2 P-code compiler

**6. Linker and Loader** [6]

6.1 Introduction

6.2 Concept of bindings, static and dynamic binding, translated, linked and load time addresses.

6.3 Relocation and linking concept – program relocation, performing relocation, public and external references, linking, binary program, object module.

6.4 Relocatability - nonrelocatable, relocatable, and self relocating programs (no algorithms), Linking for Overlays.

6.5 Object file formats: a.out, ELF, COFF, EXE, PE and COM

**7. Debuggers & Development utilities** [6]

7.1 Debugging functions and capabilities

7.2 Types of debuggers: visual & console -Case study of ddd(visual ) and gdb(console)

7.3 Development utilities on UNIX/Linux strip, make, nm, objdump, intermediate files in compilation process etc.

**8. Operating System as System Software** [6]

8.1 What Operating Systems Do – User View, System View, Defining OS

8.2 Computer System Architecture – Single processor system, Multiprocessor systems, Clustered Systems

8.3 Operating System Operations – Dual mode operation, Timer

8.4 Process Management

8.5 Memory Management

8.6 Storage Management – File system management, Mass storage management, Caching, I/O systems

8.7 Protection and Security

8.8 Distributed Systems

8.9 Special Purpose System – Real time embedded systems, Multimedia systems, Handheld systems,

8.10 Computer Environment – Traditional computing, Client server computing, Peer to peer Computing

**9. System Structure** [2]

9.1 Operating System Services

9.2 User Operating-System Interface – Command interpreter, GUI

9.3 System Calls

9.4 Types of System Calls – Process control, File management, Device management, Information maintenance, Communication, Protection

**Reference Books:**

1. Systems Programming and Operating Systems by D.M.Dhamdhare (Second Revised Edition). [Chapters: 2, 3, 4, 5, 7]

2. System Software - An introduction to Systems Programming - Leland L. Beck (Pearson Education) [ Chapter: 1]

3. Linkers and Loaders – John R. Levine, Elsevier Morgan Kaufmann[chapter 6]

4. Operating System Concepts - Siberchatz, Galvin, Gagne (8th Edition).[chapter 8, 9]

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**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Operating Systems**  
**Code No. : CS-341**

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**Semester IV**

**Total Lectures : 48**

**Aim :** To understand the design and implementation issues of Operating System.

Objectives :

- To understand design issues related to process management and various related algorithms
- To understand design issues related to memory management and various related algorithms
- To understand design issues related to File management and various related algorithms

**1. Introduction** **[2]**

- 1.1 Operating System Structure – Simple structure, Layered approach, Micro kernels, Modules
- 1.2 Virtual Machines – Introduction, Benefits
- 1.3 System Boot

**2. Process Management** **[4]**

- 2.1 Process Concept – The process, Process states, Process control block.
- 2.2 Process Scheduling – Scheduling queues, Schedulers, context switch
- 2.3 Operations on Process – Process creation with program using fork(), Process termination
- 2.4 Interprocess Communication – Shared memory system, Message passing systems.

**3. Multithreaded Programming** **[2]**

- 3.1 Overview
- 3.2 Multithreading Models

**4. Process Scheduling** **[8]**

- 4.1 Basic Concept – CPU-I/O burst cycle, CPU scheduler, Preemptive scheduling, Dispatcher
- 4.2 Scheduling Criteria
- 4.3 Scheduling Algorithms – FCFS, SJF, Priority scheduling, Round-robin scheduling, Multiple queue scheduling, Multilevel feedback queue scheduling
- 4.4 Thread Scheduling

**5. Process Synchronization** **[6]**

- 5.1 Background
- 5.2 Critical Section Problem
- 5.3 Semaphores: Usage, Implementation
- 5.4 Classic Problems of Synchronization – The bounded buffer problem, The reader writer problem, The dining philosopher problem

**6. Deadlocks** **[8]**

- 6.1 System model
- 6.2 Deadlock Characterization – Necessary conditions, Resource allocation graph
- 6.3 Deadlock Prevention
- 6.4 Deadlock Avoidance - Safe state, Resource allocation graph algorithm, Banker's Algorithm
- 6.5 Deadlock Detection
- 6.6 Recovery from Deadlock – Process termination, Resource preemption

**7. Memory Management** **[11]**

- 7.1. Background – Basic hardware, Address binding, Logical versus physical address space, Dynamic loading, Dynamic linking and shared libraries

7.2 Swapping

7.3 Contiguous Memory Allocation – Memory mapping and protection, Memory allocation, Fragmentation

7.4 Paging – Basic Method, Hardware support, Protection, Shared Pages

7.5 Segmentation – Basic concept, Hardware

7.6 Virtual Memory Management – Background, Demand paging, Performance of demand paging, Page replacement – FIFO, OPT, LRU, Second chance page replacement

## **8. File System**

[7]

8.1 File concept

8.2 Access Methods – Sequential, Direct, Other access methods

8.3 Directory and Disk Structure – Storage structure, Directory overview, Single level directory, Two level directory, Tree structure directory, Acyclic graph directory, General graph directory

8.4 Allocation Methods – Contiguous allocation, Linked allocation, Indexed allocation

8.5 Free Space Management – Bit vector, Linked list, Grouping, Counting, Space maps

### **Reference Books:**

1. Operating System Concepts - Silberchatz, Galvin, Gagne (8th Edition).

2. Operating Systems : Principles and Design – Pabitra Pal Choudhary (PHI Learning Private Limited)

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**SAVITRIBAI PHULE PUNE UNIVERSITY**  
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**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Theoretical Computer Science**  
**Code No. : CS-332**

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**Semester III**

**Total Lectures : 48**

**Aim:**

To have a introductory knowledge of automata, formal language theory and computability.

**Objectives:**

- To have an understanding of finite state and pushdown automata.
- To have a knowledge of regular languages and context free languages.
- To know the relation between regular language, context free language and corresponding recognizers.
- To study the Turing machine and classes of problems.

**Prerequisite:**

- Sets, Operations on sets, Finite & infinite sets Formal Language
- Relation, Equivalence Relation,(reflexive, transitive and symmetric closures)

**1. Introduction**

**[3]**

1.1 Symbol, Alphabet, String, Prefix & Suffix of Strings, Formal Language, Operations on Languages.

1.2 Regular Expressions (RE) : Definition & Example

1.3 Regular Expressions Identities.

**2. Finite Automata**

**[12]**

2.1 Deterministic finite Automaton – Definition, DFA as language recognizer, DFA as a pattern recognizer.

2.2 Nondeterministic finite automaton – Definition and Examples.

2.3 NFA TO DFA : Method (From Book 4)

2.4 NFA with  $\epsilon$ - transitions Definition and Examples.

2.5 NFA with  $\epsilon$ -Transitions to DFA & Examples

2.6 Finite automaton with output – Mealy and Moore machine, Definition and Examples.

2.7 Minimization of DFA, Algorithm & Problem using Table Method.

**3. Regular Languages**

**[5]**

3.1 Regular language-Definition and Examples.

3.2 Conversion of RE To FA-Examples.

3.3 Pumping lemma for regular languages and applications.

3.4 Closure properties of regular Languages

(Union, Concatenation, Complement, Intersection and Kleene closure)

**4. Context Free Grammar and Languages**

**[12]**

4.1 Grammar - Definition and Examples.

4.2 Derivation-Reduction - Definition and Examples.

4.3 Chomsky Hierarchy.

4.4 CFG : Definition & Examples. LMD, RMD, Parse Tree

4.5 Ambiguous Grammar : Concept & Examples.

4.6 Simplification of CFG :

4.6.1 Removing Useless Symbols,

4.6.2 Removing unit productions

4.6.3 Removing  $\epsilon$  productions & Nullable symbols

4.7 Normal Forms :

4.7.1 Chomsky Normal Form (CNF) Method & Problem

- 4.7.2 Greibach Normal form (GNF) Method & Problem
- 4.8 Regular Grammar : Definition.
  - 4.8.1 Left linear and Right Linear Grammar-Definition and Example.
  - 4.8.2 Equivalence of FA & Regular Grammar
    - 4.8.2.1 Construction of regular grammar equivalent to a given DFA
    - 4.8.2.2 Construction of a FA from the given right linear grammar
- 4.9 Closure Properties of CFL's(Union, concatenation and Kleen closure) Method and examples

## **5. Push Down Automaton**

[6]

- 5.1 Definition of PDA and examples
- 5.2 Construction of PDA using empty stack and final State method : Examples using stack method
- 5.3 Definition DPDA & NPDA, their correlation and Examples of NPDA
- 5.4 CFG (in GNF) to PDA : Method and examples

## **6. Turing Machine**

[10]

- 6.1 The Turing Machine Model and Definition of TM
- 6.2 Design of Turing Machines
- 6.3 Problems on language recognizers.
- 6.4 Language accepted by TM
- 6.5 Types of Turing Machines(Multitrack TM,Two way TM, Multitape TM,Non-deterministic TM)
- 6.6 Introduction to LBA (Basic Model) &CSG.( Without Problems)
- 6.7 Computing TM, Enumerating TM, Universal TM
- 6.8 Recursive Languages
  - 6.5.1. Recursive and Recursively enumerable Languages.
  - 6.5.2. Difference between recursive and recursively enumerable language.
- 6.9 Turing Machine Limitations
- 6.10 Decision Problem, Undecidable Problem, Halting Problem of TM

### **References :-**

- 1 Introduction to Automata theory, Languages and computation By John E. Hopcroft and Jeffrey Ullman – Narosa Publishing House.
2. Introduction to Automata theory, Languages and computation By John Hopcroft, Rajeev Motwani and Jeffrey Ullman –Third edition Pearson Education
3. Introduction to Computer Theory Daniel I. A. Cohen – 2<sup>nd</sup> edition – John Wiley & Sons
4. Theory of Computer Science (Automata, Language & Computation) K. L. P. Mishra & N. Chandrasekaran, PHI Second Edition
5. Introduction to Languages and The Theory of Computation John C. Martin TMH, Second Edition



**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Compiler Construction**  
**Code No. : CS-342**

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**Semester IV**

**Total Lectures : 48**

**Aim :**

To understand the various phases of a compiler and to develop skills in designing a compiler

**Objective :**

- To understand design issues of a lexical analyzer and use of Lex tool
- To understand design issues of a parser and use of Yacc tool
- To understand issues related to memory allocation
- To understand and design code generation schemes

**1. Introduction**

**[5]**

- 1.1 Definition of Compiler, Aspects of compilation.
- 1.2 The structure of Compiler.
- 1.3 Phases of Compiler – Lexical Analysis, Syntax Analysis, Semantic Analysis, Intermediate Code generation, code optimization, code generation.
- 1.4 Error Handling
- 1.5 Introduction to one pass & Multipass compilers, cross compiler, Bootstrapping.

**2. Lexical Analysis(Scanner)**

**[5]**

- 2.1 Review of Finite automata as a lexical analyzer,
- 2.2 Applications of Regular Expressions and Finite Automata ( lexical analyzer, searching using RE), Input buffering, Recognition of tokens
- 2.3 LEX: A Lexical analyzer generator (Simple Lex Program)

**3. Syntax Analysis(Parser)**

**[20]**

- 3.1 Definition , Types of Parsers
- 3.2 Top-Down Parser –
  - 3.2.1 Top-Down Parsing with Backtracking: Method & Problems
  - 3.2.2 Drawbacks of Top-Down parsing with backtracking,
  - 3.2.3 Elimination of Left Recursion(direct & indirect)
  - 3.2.4 Need for Left Factoring & examples
- 3.3 Recursive Descent Parsing : Definition
  - 3.3.1 Implementation of Recursive Descent Parser Using Recursive Procedures
- 3.4 Predictive [LL(1)]Parser(Definition, Model)
  - 3.4.1 Implementation of Predictive Parser[LL(1)]
  - 3.4.2 FIRST & FOLLOW
  - 3.4.3 Construction of LL(1) Parsing Table
  - 3.4.4 Parsing of a String using LL(1) Table
- 3.5 Bottom-Up Parsers
- 3.6 Operator Precedence Parser -Basic Concepts
  - 3.6.1 Operator Precedence Relations form Associativity & Precedence
  - 3.6.2 Operator Precedence Grammar
  - 3.6.3 Algorithm for LEADING & TRAILING(with ex.)
  - 3.6.4 Algorithm for Operator Precedence Parsing (with ex.)
  - 3.6.5 Precedence Functions
- 3.7 Shift Reduce Parser
  - 3.7.1 Reduction, Handle, Handle Pruning
  - 3.7.2 Stack Implementation of Shift Reduce Parser ( with examples)

- 3.8 LR Parser
  - 3.8.1 Model
  - 3.8.2 Types [SLR(1), Canonical LR, LALR] Method & examples.
- 3.9 YACC (from Book 3) –program sections, simple YACC program for expression evaluation

#### **4. Syntax Directed Definition [8]**

- 4.1 Syntax Directed Definitions(SDD)
  - 4.1.1 Inherited & Synthesized Attributes
  - 4.1.2 Evaluating an SDD at the nodes of a Parse Tree, Example
- 4.2 Evaluation Orders for SDD's
  - 4.2.1 Dependency Graph
  - 4.2.2 Ordering the Evaluation of Attributes
  - 4.2.3 S-Attributed Definition
  - 4.2.4 L-Attributed Definition
- 4.3 Application of SDT
  - 4.3.1 Construction of syntax trees,
  - 4.3.2 The Structure of a Type
- 4.4 Translation Schemes
  - 4.4.1 Definition, Postfix Translation Scheme

#### **5. Memory Allocation [2]**

- 5.1 Memory allocation – static and dynamic memory allocation,
- 5.2 Memory allocation in block structure languages, Array allocation and access.

#### **6. Code Generation and Optimization [8]**

- 6.1 Compilation of expression –
  - 6.1.1 Concepts of operand descriptors and register descriptors with example.
  - 6.1.2 Intermediate code for expressions – postfix notations,
  - 6.1.3 triples and quadruples, expression trees.
- 6.2 Code Optimization – Optimizing transformations – compile time evaluation, elimination of common sub expressions, dead code elimination, frequency reduction, strength reduction
- 6.3 Three address code
  - 6.3.1 DAG for Three address code
  - 6.3.2 The Value-number method for constructing DAG's.
- 6.4 Definition of basic block, Basic blocks And flow graphs
- 6.5 Directed acyclic graph (DAG) representation of basic block
- 6.6 Issues in design of code generator

#### **References :-**

1. Compilers: Principles, Techniques, and Tools ,Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman
2. Principles of Compiler Design By : Alfred V. Aho, Jeffrey D. Ullman (Narosa Publication House)
3. LEX & YACC (O'reilly Publication)

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Computer Networks -I**  
**Code No. : CS-333**

**Semester III**

**Total Lectures : 48**

Pre-requisites: Basics of computer, Knowledge of ‘C’ for assignment.

Objectives: This course will prepare students in Basic networking concepts.

1. Understand different types of networks, various topologies and application of networks.
2. Understand types of addresses, data communication.
3. Understand the concept of networking models, protocols, functionality of each layer.
4. Learn basic networking hardware and tools.

Ch.No.	Name of Chapter	Reference Book
<b>1</b>	<b>Chapter 1 Introduction to Computer Networks</b>	<b>[Lectures 8]</b>
1.1	Computer Networks- Goals and applications – Business Application , Home Application, Mobile User, Social Issues	Book 1 CH1 (Pg. No.3 -14)
1.2	Network Hardware - Broadcast and point-to-point	Book 1 CH1 (Pg. No.14-16)
1.3	topologies – star, bus, mesh, ring etc.	Book 2 CH1 (Pg. No. 9-13)
1.4	Network Types-LAN, MAN, WAN, Wireless Networks, Home Networks, Internetwork	Book 1 CH1 (Pg. No.16-26)
1.5	Data Communication-Definition, components, data representation, Data Flow	Book 2 CH1 (Pg. No. 3-7)
1.6	Protocols & Standards De facto and De jure standard,	Book 2 CH1 (Pg. No. 19-20)
1.7	Network Software - Protocol Hierarchies -layers, protocols, peers, interfaces Network architecture, protocol stack, Design issues of the layers –addressing, error control, flow control, multiplexing and demultiplexing, routing Connection-oriented and connectionless service, Service Primitives – listen, connect, receive, send, disconnect and Berkley Socket ,the relationships of services to protocols.	Book 1 CH1 (Pg. No.26-37)
2.	Network Models	[Lectures 5]
2.1	OSI Reference Model - Functionality of each layer	Book 2 CH2 (Pg. No 29-42)

2.2	TCP/IP Reference Model, Comparison of OSI and TCP/IP model	Book 1 CH1 (Pg. No. 41-46)
2.3	TCP/IP Protocol Suite	Book 2 CH2 (Pg. No. 42-45)
2.4	Addressing - Physical, Logical and Port addresses (No examples)	Book 2 CH2 (Pg. No.45-50)
3.	Transmission Media	[Lectures 5]
3.1	Twisted pair cable – UTP Vs STP, categories connectors & applications , Coaxial cable – standards, connectors & applications Fiber Optic cable – propagation modes, connectors & applications(No diagrams will be asked in examination)	Book 2 CH7 (Pg. No.192,193, 195-202)
3.2	Unguided Media – Wireless- Radio Waves,- Microwaves, Infrared	Book 2 CH7 (Pg. No. 203-208)
3.3	Light wave transmission	Book 1 CH2 (Pg. No. 107-108)
3.4	Types of cabling and Networking Tool - CAT5 and CAT6 Cable Color Code, Crossover Cabling and Straight Through Cable, Crimping and Line testing tool	Book 3
4.	The Physical Layer	[Lectures 14]
4.1	Analog and Digital data, Analog and Digital signals, Periodic & Non-periodic signals Digital Signals- Bit rate, bit length, baseband Transmission (no cases)	Book 2 CH3 (Pg. No. 57-58) Book 2 CH3 (Pg. No. 71-75)
4.2	Transmission Impairments –attenuation, distortion and noise, Data Rate Limits – Noiseless channel: Nyquist’s bit rate,noisy channel : Shannon’s law (Enough problems should be covered on every topic.)	Book 2 CH3 (Pg. No. 80-88)
4.3	Performance of the Network Bandwidth, Throughput, Latency(Delay), Bandwidth –Delay Product, Jitter	Book 2 CH3 (Pg. No. 89-94)
4.4	Line Coding Characteristics, Line Coding Schemes – Unipolar - NRZ, Polar-NRZ-I, NRZ-L, RZ, Manchester and Differential Manchester (Enough problems should be covered on every topic.)	Book 2 CH4 (Pg. No. 101-109)
4.5	Transmission Modes, Parallel Transmission and Serial Transmission –Asynchronous and Synchronous and Isochronous	Book 2 CH4 (Pg. No. 131-135)
4.6	Trunks & Multiplexing FDM and TDM	Book 1 CH2 (Pg. No. 137,138 140-143)

4.7	Switching - Circuit Switching, Message Switching and Packet Switching, comparison of circuit & packet switching	Book 1 CH2 (Pg. No. 146-151)
4.8	Physical Layer Devices Repeaters, Hubs- active hub Passive hub	Book 2 CH15 (pg. No. 445-447)
5.	The Data Link Layer	[Lectures 9]
5.1	Design Issues – Services provided to the Network Layer , Framing – Concept, Methods - Character Count, Flag bytes with Byte Stuffing, Starting & ending Flags with Bit Stuffing and Physical Layer Coding Violations, Error Control, Flow Control	Book 1 CH3 (pg. No. 184-192)
5.2	Error detection code CRC (Enough problems should be covered on every topic.)	Book 1 CH3 (pg. No. 196-199)
5.3	Data Link Layer Protocols –Noiseless channel -A Simplex, Stop-And-Wait protocol, noisy channel –stop & wait, ARR, Pipelining, Go –back –N ARR & ARQ, selective repeat ARR(No examples & no algorithms)	Book 1 CH3 (pg. No. 312-338)
5.4	Sliding Window Protocols Piggybacking-Need, Advantages/Disadvantages, 1-bit sliding window protocols,	Book 1 CH3 (pg. No. 211-216)
5.5	Data Link Layer Protocols-HDLC – frame format, all frame types PPP – Use, Frame Format, Use of PPP in the Internet	Book 1 CH3 (pg. No. 234-242)
5.6	Data Link Layer Devices - Bridges – Filtering, Transparent Bridges, spanning tree and Source Routing Bridges, Bridges Connecting Different LANs	Book 2 CH15 (pg. No. 447-454)
5.7	Remote bridges	Book 1 CH4 (pg. No. 325-326)
6.	The Medium Access Sublayer	[Lectures 7]
6.1	Random Access Protocols ALOHA – pure and slotted	Book 2 CH12 (pg. No. 364-390)
6.2	CSMA – 1-persistent, p-persistent and non-persistent CSMA/CD,CSMA/CA	
6.3	Controlled Access Reservation, Polling and Token Passing	
6.4	Channelization FDMA, TDMA and CDMA-Analogy, Idea, Chips, Data Representation, Encoding and Decoding, Signal Level, Sequence Generation(Enough problems should be covered on every topic.)	

**Reference Books:**

- 1) Computer Networks by Andrew Tanenbaum, Pearson Education.[4<sup>th</sup> Edition]
- 2) Data Communication and Networking by Behrouz Forouzan, TATA McGraw Hill. .[4<sup>th</sup> Edition]
- 3) Networking All In One Dummies Wiley Publication.[5<sup>th</sup> Edition]

**Guidelines For Examination:**

- 1) Frame and Packet formats should be asked.

- 2) Problems should be asked at least for 8 marks.
- 3) Page no listed above may vary according to year of publication of 4<sup>th</sup> edition but topics remain same.
- 4) All sub topics listed pages of respective reference books should be covered.

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**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Computer Networks -II**  
**Code No. : CS-343**

**Semester IV**

**Total Lectures: 48**

Pre-requisites: Basics of computer networks covered last semester, Knowledge of 'C'.

Objectives: This course will prepare students in

1. Basic networking concepts.
2. Understand wired and wireless networks, its types, functionality of layer.
3. Understand importance of network security and cryptography.

Ch. No.	Name of Chapter	Reference Book
1.	Wired LANs	[Lectures 9]
1.1	IEEE Standards Data Link Layer, Physical Layer	Book 2 CH13 (Pg. No 395-397)
1.2	Standard Ethernet MAC Sublayer – Frame Format, Frame Length, Addressing, Access Method	Book 2 CH13 (Pg. No 397-402)
1.3	Physical Layer – Encoding and Decoding, 10Base5, 10Base2, 10Base-T, 10Base-F,	Book 2 CH13 (Pg. No 402-405)
1.4	Changes In The Standard – Bridged Ethernet, Switched Ethernet, Full Duplex Ethernet	Book 2 CH13 (Pg. No 406-409)
1.5	Fast Ethernet – Goals, MAC Sublayer, Topology, Implementation	Book 2 CH13 (Pg. No.409-410)
1.6	Gigabit Ethernet – goals, MAC Sublayer, Topology, Implementation	Book 2 CH13 (Pg. No 412-414)
1.7	Ten-Gigabit Ethernet – goals, MAC Sublayer, Physical Layer	Book 2 CH13 (Pg. No 416)
1.8	Backbone Networks Bus Backbone, Star Backbone, Connecting Remote LANs	Book 2 CH15 (Pg. No 456-458)
1.9	Virtual LANs Membership, Configuration, Communication between Switches, IEEE standards Advantages	Book 1 CH1 (Pg. No 458-463)
2.	Wireless LAN	[Lectures 2]
2.1	IEEE 802.11 Architecture – Basic Service Set, Extended Service Set, Station Types	Book 2 CH14 (Pg. No421-422)

2.2	Bluetooth Architecture – Piconet, scatternet	Book 2 CH14 (Pg. No 434-436)
3.	The Network Layer	[Lectures 10]
3.1	Design Issues Store-and-forward packet switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection Oriented Service, Comparison of Virtual Circuit and Datagram subnets	Book 1 CH5 (Pg. No 343-349)
3.2	Logical Addressing IPV4 Addresses – Address Space, Notations, Classful Addressing, Subnetting, Supernetting, Classless Addressing, Network Address Translation(NAT), (Enough problems should be covered on Addressing),	Book 2 CH19 (Pg. No 549-566)
3.3	IPV4 Protocol Datagram Format, Fragmentation, Checksum, Options	Book 2 CH20 (Pg. No 582-596)
3.4	Routing Properties of routing algorithm, Comparison of Adaptive and Non- Adaptive Routing Algorithms	Book 1 CH5 (Pg. No 350-352)
3.5	Congestion Control – Definition, Factors of Congestion, Difference between congestion control and flow control, General Principles of Congestion Control, Congestion Prevention Policies	Book 1 CH5 (Pg. No 384-389)
3.6	Network Layer Devices –Routers	Book 2 CH15 (Pg. No. 455)
4.	Address Mapping	[Lectures 4]
4.1	Protocol(ARP)-Cache Memory, Packet Format, Encapsulation, Operation, Four Different Cases, Proxy ARP, RARP , BOOTP, DHCP – Static Address Allocation, Dynamic Address Allocation, Manual and automatic Configuration	Book 2 CH21 (Pg. No 611-620)
5.	The Transport Layer	[Lectures 6]
5.1	Process-to-Process Delivery Client Server Paradigm, Multiplexing and De-multiplexing, Connectionless Vs Connection-Oriented Service, Reliable Vs Unreliable	Book 2 CH23 (Pg. No 703-708)
5.2	User Datagram Protocol(UDP) Datagram Format, Checksum, UDP operations, Use of UDP	Book 2 CH23 (Pg. No709-715)
5.3	Transmission Control Protocol (TCP) TCP Services – Process to-Process Communication, Stream Delivery Service, sending and Receiving Buffers, Segments, Full –Duplex Communication, Connection oriented service, Reliable service	Book 2 CH23 (Pg. No 715-719)
5.4	TCP Features –Numbering System, Byte Number, Sequence Number, Acknowledgement Number, Flow Control, Error Control, Congestion Control	Book 2 CH23 (Pg. No 719-720)
5.5	TCP Segment – Format	Book 2 CH23



		(Pg. No 721-723)
6.	The Application Layer	[Lectures 7]
6.1	Domain Name System (DNS) Name Space, Domain, Name Space, Distribution of Name Space, DNS in the Internet, Resolution	Book 2 CH25 (Pg. No 797-809)
6.2	E-MAIL Architecture, User Agent, Message Transfer Agent-SMTP, Message Access Agent-POP3, IMAP4, Web Based Mail	Book 2 CH26 (Pg. No 824-840)
6.3	File Transfer Protocol (FTP) Communication over control connection, Communication over Data Connection, Anonymous FTP	Book 2 CH26 (Pg. No 840-844)
6.4	WWW Architecture, WEB Documents	Book 2 CH27 (Pg. No 851-861)
6.5	HTTP - HTTP Transaction, Persistent and Non persistent Connection, Proxy Server	Book 2 CH27 (Pg. No 861-868)
6.6	Devices- Gateways –Transport & Application Gateways	Book 1 CH4 (Pg. No 328)
7.	Network Security	[Lectures 10]
7.1	Introduction – Security Services- Message-Confidentiality, Integrity, Authentication, Non repudiation. Entity (User)- Authentication.	Book 2 CH31 (Pg. No 961-962)
7.2	Message confidentiality –Confidentiality with Asymmetric-Key Cryptography, Confidentiality with Symmetric-Key Cryptography	Book 2 CH31 (Pg. No 962-964)
7.3	Cryptography Encryption Model, Substitution Cipher and Transposition Cipher (Problems should be covered.)	Book 1 CH8 (Pg. No 724-730)
7.4	Two Fundamental Cryptographic Principles	Book 1 CH8 (Pg. No 735-736)
7.5	Communication Security Firewalls	Book 1 CH8 (Pg. No 776-779)
7.6	Web Security Threats, Secure Naming, DNS Spoofing, Secure DNS, Self Certifying names	Book 1 CH8 (Pg. No 805-813)
7.7	Mobile Code Security Java Applet Security, ActiveX, JavaScript, Viruses	Book 1 CH8 (Pg. No 816-819)
7.8	Social Issues Privacy, Anonymous Remailers, Freedom of Speech, Steganography, Copyright	Book 1 CH8 (Pg. No 819-828)

**Reference Books:**

1. Computer Networks by Andrew Tanenbaum, Pearson Education.[4<sup>th</sup> Edition]
2. Data Communication and Networking by Behrouz Forouzan, TATA McGraw Hill. .[4<sup>th</sup> Edition]

**Guidelines For Examination:**

1. Frame and Packet formats should be asked.
2. Problems should be asked at least for 8 marks.

3. Page no listed above may vary according to year of publication of 4<sup>th</sup> edition but topics remain same.
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**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Internet Programming I**  
**Code No. : CS-334**

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**Semester III**

**Total Lectures: 48**

**Aim:** To Design dynamic and interactive Web pages.

**Objective:**

- Learn Core-PHP, Server Side Scripting Language
- Learn PHP-Database handling.

**Prerequisite:** HTML.

- |   |             |
|---|-------------|
| <b>1. Introduction to web techniques</b>                    | <b>[8]</b>  |
| 1.1 HTTP basics, Introduction to Web server and Web browser |             |
| 1.2 Introduction to PHP                                     |             |
| 1.3 What does PHP do?                                       |             |
| 1.4 Lexical structure                                       |             |
| 1.5 Language basics   |             |
| Book 1 chapter 2  |             |
| <br>  |             |
| <b>2. Function and String</b>                               | <b>[10]</b> |
| 2.1 Defining and calling a function                         |             |
| 2.2 Default parameters                                      |             |
| 2.3 Variable parameters, Missing parameters                 |             |
| 2.4 Variable function, Anonymous function                   |             |
| 2.5 Types of strings in PHP                                 |             |
| 2.6 Printing functions                                      |             |
| 2.7 Encoding and escaping                                   |             |
| 2.8 Comparing strings                                       |             |
| 2.9 Manipulating and searching strings                      |             |
| 2.10 Regular expressions                                    |             |
| Book 1 chapter 3 and 4                                      |             |
| <br>  |             |
| <b>3. Arrays</b>  | <b>[6]</b>  |
| 3.1 Indexed Vs Associative arrays                           |             |
| 3.2 Identifying elements of an array                        |             |
| 3.3 Storing data in arrays                                  |             |
| 3.4 Multidimensional arrays                                 |             |
| 3.4 Extracting multiple values                              |             |
| 3.5 Converting between arrays and variables                 |             |
| 3.6 Traversing arrays                                       |             |
| 3.7 Sorting   |             |
| 3.8 Action on entire arrays                                 |             |
| 3.9 Using arrays  |             |
| Book 1 chapter 5  |             |

**4. Introduction to Object Oriented Programming** [8]  
4.1 Classes  
4.2 Objects  
4.3 Introspection  
4.4 Serialization  
4.5 Inheritance  
4.6 Interfaces  
4.7 Encapsulation  
Book 1 , 2 chapter 12

**5. Files and directories** [6]  
5.1 Working with files and directories  
5.2 Opening and Closing, Getting information about file, Read/write to file, Splitting name and path from file, Rename and delete files  
5.3 Reading and writing characters in file  
5.4 Reading entire file  
5.5 Random access to file data  
5.6 Getting information on file  
5.7 Ownership and permissions  
Book 2 chapter 7

**6. Databases (PHP-PostgreSQL)** [10]  
6.1 Using PHP to access a database  
6.2 Relational databases and SQL  
6.3 PEAR DB basics  
6.4 Advanced database techniques  
6.5 Sample application (Mini project)  
Book 1 chapter 9

## References

1. Programming PHP By Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
2. Beginning PHP 5 , Wrox publication
3. PHP web services, Wrox publication
4. AJAX Black Book, Kogent solution
5. Mastering PHP , BPB Publication
6. PHP cookbook, O'Reilly publication
7. PHP for Beginners, SPD publication
8. Programming the World Wide Web , Robert W Sebesta(3<sup>rd</sup> Edition)
9. Check out Joomla!press  
**Pearson** (*Addison-Wesley Professional*).
10. [www.php.net.in](http://www.php.net.in)
11. [www.W3schools.com](http://www.W3schools.com)
12. [www.wrox.com](http://www.wrox.com)
13. <https://api.drupal.org>

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**TITLE OF PAPER : Internet Programming II**  
**Code No. : CS-344**

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**Semester IV**

**Total Lectures: 48**

**Aim:** To Design dynamic and interactive Web pages.

**Objective:**

- Learn different technologies used at client Side Scripting Language
- Learn XML,CSS and XML parsers.
- One PHP framework for effective design of web application.
- Learn JavaScript to program the behavior of web pages.
- Learn AJAX to make our application more dynamic.

**1. Web Techniques** **[10]**

- 1.1 Variables
  - 1.2 Server information
  - 1.3 Processing forms
  - 1.4 Setting response headers
  - 1.5 Maintaining state
  - 1.6 SSL
- Book 1 chapter 7

**2. Handling email with php** **[8]**

- 2.1 Email background
  - 2.2 Internet mail protocol
  - 2.3 Structure of an email message
  - 2.4 Sending email with php
  - 2.5 Email attachments.
  - 2.6 Email id validation and verification
  - 2.7 PHP error handling.
- Book 2 chapter 15

**3. PHP framework** **[4]**

- 3.1 Introduction to PHP framework.
  - 3.2 Features, Applications.
  - 3.3 One example like JOOMLA,DRUPAL.
- Book 11, <https://api.drupal.org>

**4. XML** **[8]**

- 4.1 What is XML?
  - 4.2 XML document Structure
  - 4.3 PHP and XML
  - 4.4 XML parser
  - 4.5 The document object model
  - 4.6 The simple XML extension
  - 4.7 Changing a value with simple XML
- Book 2 chapter 8

**5. WEB DESIGNING TECHNOLOGIES(JavaScript-DHTML)** **[10]**

- 5.1 Overview of JavaScript, DHTML
- 5.2 Object Orientation and JavaScript

- 5.3 Basic Syntax(JS datatypes, JS variables )
- 5.4 Primitives, Operations and Expressions
- 5.5 Screen Output and keyboard input(Verification and Validation)
- 5.6 JS Control statements
- 5.7 JS Functions
- 5.8 JavaScript HTML DOM Events(onmouseup, onmousedown, onclick, onload,onmouseover,onmouseout).
- 5.9 JS Strings.
- 5.10 JS String methods
- 5.11 JS popup boxes(alert, confirm, prompt).
- 5.12 Changing property value of different tags using DHTML  
(ex. adding innerhtml for DIV tag, changing source of image etc.).

Book 10, [www.w3schools.com](http://www.w3schools.com).

## 6. AJAX

[8]

- 6.1 Introduction of AJAX
  - 6.2 AJAX web application model
  - 6.3 AJAX –PHP framework
  - 6.4 Performing AJAX validation
  - 6.5 Handling XML data using php and AJAX
  - 6.6 Connecting database using php and AJAX
- Book 4 chapter 1,2 and 9

## References

1. Programming PHP By Rasmus Lerdorf and Kevin Tatroe O'Reilly publication
2. Beginning PHP 5, Wrox publication
3. PHP web services , Wrox publication
4. AJAX Black Book Kogent solution
5. Mastering PHP BPB Publication
6. PHP cookbook O'Reilly publication
7. Learning PHP and MYSQL, O'Reilly publication
8. PHP and MYSQL, O'Reilly publication
9. PHP for Beginners, SPD publication
10. Programming the World Wide Web , Robert W Sebesta(3<sup>rd</sup> Edition)
11. Check out Joomla!presss **Pearson** (*Addison-Wesley Professional*).
12. [www.php.net.in](http://www.php.net.in)
13. [www.W3schools.com](http://www.W3schools.com)
14. [www.wrox.com](http://www.wrox.com)
15. <https://api.drupal.org>

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**TITLE OF PAPER : Programming in Java-I**  
**Code No. : CS-335**

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**Semester IV**

**Total Lectures: 48**

**Prerequisite:**

- Knowledge of C Programming language

**Objective:**

- To learn Object Oriented Programming language
- To handle abnormal termination of a program using exception handling
- To create flat files
- To design User Interface using Swing and AWT

**1. An Introduction to Java** **[4]**

- 1.1 A Short History of Java
- 1.2 Features or buzzwords of Java
- 1.3 Comparison of Java and C++
- 1.4 Java Environment
- 1.5 Simple java program
- 1.6 Java Tools – jdb, javap, javadoc
- 1.7 Java IDE – Eclipse/NetBeans (Note: Only for Lab Demonstration)

**2. An Overview of Java** **[4]**

- 2.1 Types of Comments
- 2.2 Data Types
- 2.3 Final Variable
- 2.4 Declaring 1D, 2D array
- 2.5 Accepting input using Command line argument
- 2.6 Accepting input from console (Using BufferedReader class)

**3. Objects and Classes** **[8]**

- 3.1 Defining Your Own Classes
- 3.2 Access Specifiers (public, protected, private, default)
- 3.3 Array of Objects
- 3.4 Constructor, Overloading Constructors and use of 'this' Keyword
- 3.5 static block, static Fields and methods
- 3.6 Predefined class – Object class methods (equals(), toString(), hashCode(), getClass())
- 3.7 Inner class
- 3.8 Creating, Accessing and using Packages
- 3.9 Creating jar file and manifest file
- 3.10 Wrapper Classes
- 3.11 Garbage Collection (finalize() Method)
- 3.12 Date and time processing

**4. Inheritance and Interface** **[7]**

- 4.1 Inheritance Basics (extends Keyword) and Types of Inheritance
- 4.2 Superclass, Subclass and use of Super Keyword
- 4.3 Method Overriding and runtime polymorphism

- 4.4 Use of final keyword related to method and class
- 4.5 Use of abstract class and abstract methods
- 4.6 Defining and Implementing Interfaces
- 4.7 Runtime polymorphism using interface
- 4.7 Object Cloning

**5. Exception Handling [4]**

- 5.1 Dealing Errors
- 5.2 Exception class, Checked and Unchecked exception
- 5.3 Catching exception and exception handling
- 5.4 Creating user defined exception
- 5.5 Assertions

**6. Strings, Streams and Files [7]**

- 6.1 String class and StringBuffer Class
- 6.2 Formatting string data using format() method
- 6.2 Using the File class
- 6.3 Stream classes
  - Byte Stream classes
  - Character Stream Classes
- 6.4 Creation of files
- 6.5 Reading/Writing characters and bytes
- 6.6 Handling primitive data types
- 6.7 Random Access files

**7. User Interface Components with AWT and Swing [10]**

- 7.1 What is AWT ? What is Swing? Difference between AWT and Swing.
- 7.2 The MVC Architecture and Swing
- 7.3 Layout Manager and Layouts, The JComponent class
- 7.4 Components –
  - JButton, JLabel, JText, JTextArea, JCheckBox and JRadioButton,
  - JList, JComboBox, JMenu and JPopupMenu Class, JMenuItem and JCheckBoxMenuItem,
  - JRadioButtonMenuItem , JScrollBar
- 7.5 Dialogs (Message, confirmation, input), JFileChooser, JColorChooser
- 7.6 Event Handling: Event sources, Listeners
- 7.7 Mouse and Keyboard Event Handling
- 7.8 Adapters
- 7.9 Anonymous inner class

**8. Applet [4]**

- 8.1 Applet Life Cycle
- 8.2 appletviewer tool
- 8.3 Applet HTML Tags
- 8.4 Passing parameters to Applet
- 8.5 repaint() and update() method

**References:**

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B.Sc. COMPUTER SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Programming in Java-II**  
**Code No. : CS-345**

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**Semester IV**

**Total Lectures : 48**

**Prerequisite:**

- Knowledge of Core Java (CS – 345)

**Objectives:**

- To learn database programming using Java
- To study web development concept using Servlet and JSP
- To develop a game application using multithreading
- To learn socket programming concept

**1. Collection**

**[6]**

- 1.1 Introduction to the Collection framework
- 1.2 List – ArrayList, LinkedList and Vector, Stack, Queue
- 1.3 Set - HashSet, TreeSet, and LinkedHashSet
- 1.4 Map – HashMap, LinkedHashMap, Hashtable and TreeMap
- 1.5 Interfaces such as Comparator, Iterator, ListIterator, Enumeration

**2. Database Programming**

**[10]**

- 2.1 The design of jdbc, jdbc configuration
- 2.2 Types of drivers
- 2.3 Executing sql statements, query execution
- 2.4 Scrollable and updatable result sets
- 2.5 Metadata – DatabaseMetadata, ResultSetMetadata
- 2.6 Transactions – commit(), rollback(), SavePoint  
(Database : PostgreSQL)

**3. Servlet**

**[12]**

- 3.1 Introduction to Servlet and Hierarchy of Servlet
- 3.2 Life cycle of servlet
- 3.3 Tomcat configuration (Note: Only for Lab Demonstration)
- 3.4 Handling get and post request (HTTP)
- 3.5 Handling a data from HTML to servlet
- 3.6 Retriving a data from database to servlet
- 3.7 Session tracking – User Authorization, URL rewriting, Hidden form fields, Cookies and HttpSession

**4. JSP**

**[10]**

- 4.1 Simple first JSP program
- 4.2 Life cycle of JSP
- 4.2 Implicit Objects
- 4.3 Scripting elements – Declarations, Expressions, Scriptlets, Comments
- 4.4 JSP Directives – Page Directive, include directive
- 4.5 Mixing Scriptlets and HTML
- 4.6 Example of forwarding contents from database to servlet, servlet to JSP and displaying it using JSP scriptlet tag



## **5. Multithreading**

[6]

- 5.1 What are threads?
- 5.2 Life cycle of thread
- 5.3 Running and starting thread using Thread class
- 5.4 Thread priorities
- 5.5 Running multiple threads
- 5.6 The Runnable interface
- 5.7 Synchronization and interthread communication

## **6. Networking**

[4]

- 6.1 Networking basics – Protocol, Addressing, DNS, URL, Socket, Port
- 6.2 The java.net package – InetAddress, URL, URLConnection class
- 6.3 SocketServer and Socket class
- 6.4 Creating a Socket to a remote host on a port (creating TCP client and server)
- 6.5 Simple Socket Program Example

### **References:**

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press
- 5) Core Java Volume-II-Advanced Features, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Object Oriented Software Engineering**  
**Code No. : CS-336**

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**Semester III**

**Total Lectures: 48**

**Prerequisites**

- Knowledge of Object Oriented Concepts
- Knowledge of Classical Software Engineering

**Aim**

To Understand Object Oriented Modeling techniques and their applicability.

**Objectives**

- Understanding importance of Object Orientation in Software engineering
- Understand the components of Unified Modeling Language
- Understand techniques and diagrams related to structural modeling
- Understand techniques and diagrams related to behavioral modeling
- Understand techniques of Object Oriented analysis, design and testing

**1. Object Oriented Concepts and Principles**

**[4]**

1.1 What is Object Orientation ? - Introduction , Object , Classes and Instance , Polymorphism, Inheritance

1.2 Object Oriented System Development- Introduction, Function/Data Methods (With Visibility), Object Oriented Analysis, Object Oriented Construction

1.3 Identifying the Elements of an Object Model

1.4 Identifying Classes and Objects

1.5 Specifying the Attributes (With Visibility)

1.6 Defining Operations

1.7 Finalizing the Object Definition

**2. Introduction to UML**

**[2]**

2.1 Concept of UML

2.2 Advantages of UML

**3. Basic Structural Modeling**

**[5]**

3.1 Classes

3.2 Relationship

3.3 Common Mechanism

3.4 Class Diagram (Minimum three examples should be covered)

**4. Advanced Structural Modeling**

**[7]**

4.1 Advanced Classes

4.2 Advanced Relationship

4.3 Interface

4.4 Types and Roles

4.5 Packages

4.6 Object Diagram (Minimum three examples should be covered)

**5. Basic Behavioral Modeling**

**[9]**

- 5.1 Interactions
- 5.2 Use Cases and Use Case Diagram with stereo types (Minimum three examples should be covered)
- 5.3 Interaction Diagram (Minimum two examples should be covered)
- 5.4 Sequence Diagram (Minimum two examples should be covered)
- 5.6 Activity Diagram (Minimum two examples should be covered)
- 5.6 State Chart Diagram (Minimum two examples should be covered)

## **6. Object Oriented Analysis**

[6]

- 6.1 Iterative Development and the Rational Unified Process
- 6.2 Inception
- 6.3 Understanding Requirements
- 6.4 Use Case Model From Inception to Elaboration
- 6.5 Elaboration

## **7. Object Oriented Design**

[4]

- 7.1 The Booch Method, The Coad and Yourdon Method and Jacobson Method and Rumbaugh Method
- 7.2 The Generic Components of the OO Design Model
- 7.3 The System Design Process - Partitioning the Analysis Model, Concurrency and Sub System Allocation, Task Management Component, The Data Management Component, The Resource Management Component, Inter Sub System Communication
- 7.4 Object Design Process

## **8. Architectural modeling**

[6]

- 8.1 Component
- 8.2 Components Diagram (Minimum two examples should be covered)
- 8.3 Deployment Diagram (Minimum two examples should be covered)
- 8.4 Collaboration Diagram (Minimum two examples should be covered)

## **9. Object Oriented Testing**

[5]

- 9.1 Object Oriented Testing Strategies
- 9.2 Test Case Design for Object Oriented Software
- 9.3 Inter Class Test Case Design  
(Use of any freeware designing tool)

## **References.**

1. Grady Booch, James Rumbaugh, The Unified Modeling Language User/Reference Guide, Pearson Education INC
2. Ivar Jacobson, Object Oriented Software Engineering, Pearson Education INC
3. Craig Larman, Applying UML and Patterns Pearson Education INC
4. Bennett, Simon, Object Oriented Analysis and Design McGraw Hill

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Computer Graphics**  
**Code No. : CS-346**

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**Semester IV**

**Total Lectures: 48**

**Pre – Requisites**

- Computer programming skills in C programming language
- Basic understanding of use of data structures
- Basic Mathematical concepts related to matrices and geometry

**Objectives**

- To study how graphics objects are represented in Computer
- To study how graphics system in a computer supports presentation of graphics information
- To study how interaction is handled in a graphics system
- To study how to manipulate graphics object by applying different transformations
- To provide the programmer's perspective of working of computer graphics

**1. Introduction to Computer graphics** **[4]**

- 1.1 Introduction to computer graphics & graphics systems
- 1.2 Components of Computer Graphics Representation, Presentation , Interaction and Transformations
- 1.3 Applications of Computer Graphics
- 1.3 Pixel/Point ,Raster v/s Vector ,RGB color model, intensity
- 1.4 Programming essentials – event driven programming. OpenGL library

**2. Input devices and Interaction tasks** **[4]**

- 2.1 Logical Interaction – Locator, valuator , pick and choice;
- 2.2 Physical devices used for interaction – keyboard, mouse, trackball,spaceball, tablets, light pen, joy stick, touch panel, data glove;
- 2.4 Keyboard , Mouse interaction in OpenGL
- 2.5 Graphical User Interfaces- cursors , radio buttons, scroll bars, menus, icons
- 2.6 Implementing GUI in open GL

**3. Presentation and Output devices** **[4]**

- 3.1 Presentation Graphics - frame buffer, display file, lookup table;
- 3.2 Display devices, Random and Raster scan display devices; CRT,
- 3.3 Hardcopy devices - Plotters and Printers

**4. Raster Scan Graphics** **[10]**

- 4.1 Line drawing algorithms; DDA algorithm, Bresenham's line drawing algorithm, Circle generation algorithm;
- 4.2 Scan conversions- Generation of the Display, Image compression
- 4.3 Displaying Lines and characters
- 4.3 Polygon filling -Scan converting polygons, fill algorithms, Boundary fill algorithm, flood fill algorithm

**5. Transformations** **[7]**

- 5.1 Basic transformations: translation, rotation, scaling; Matrix representations & homogeneous coordinates, Reflection, shear
- 5.2 Transformation of points, lines, parallel lines, intersecting lines. Viewing pipeline
- 5.3 Window to viewport co-ordinate transformation. Setting window and viewport in OpenGL.

## **6 Clipping** [7]

- 6.1 clipping operations , point clipping ,
- 6.2 Line clipping; Cohen Sutherland algorithm, Midpoint subdivision algorithm, Cyrus beck algorithm;
- 6.3 Polygon clipping , Sutherland Hodgman algorithm, Weiler-Atherton Algorithm

## **7 3D transformation & viewing** [6]

- 7.1 3D transformations: translation, rotation, scaling & other transformations;
- 7.2 Three dimensional viewing, Parallel and Perspective projections,
- 7.3 View Volumes and General Projection Transformations.
- 7.4 3 D clipping

## **8 Hidden surfaces Elimination** [4]

- 8.1 Depth comparison, A-buffer algorithm, Back face detection; Depth -Buffer
- 8.2 Scan-line Method - BSP tree method, the Painter's algorithm, Area-subdivision algorithm;

### **Text Books:**

1. Hearn, Baker – “ Computer Graphics ( C version 2nd Ed.)” – Pearson education
2. F. S. Hill, Stephen Kelly, Computer Graphics using OpenGL, PHI Learning
3. David F. Rogers - Procedural Elements of Computer Graphics, Tata McGRAw Hill

### **Reference Books:**

4. Foley, Vandam, Feiner, Hughes – “Computer Graphics principles (2nd Ed.) – Pearson Education.
5. W. M. Newman, R. F. Sproull – “Principles of Interactive computer Graphics” – TMH.
6. D. F. Rogers, J. A. Adams – “ Mathematical Elements for Computer Graphics (2nd Ed.)” – TMH
7. Z. Xiang, R. Plastock – “ Schaum's outlines Computer Graphics (2nd Ed.)” – TMH

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : System Programming & Operating System**  
**Code No. : CS-347**

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**Aim:**

To understand the process of designing and implementing System programs and operating system components.

**Objective :-**

1. Design and implement System programs with minimal features to understand their complexity.
2. Design and implement simulations of operating system level procedures.

**Syllabus**

Sr. No	Topic	Lectures
1	Line Editor	8 lectures
2	SMAC0 simulator	8 lectures
3	Assembler	12 Lectures
4	Macro processor	12 lectures
5	DFA driver	8 lectures
6	Development Utilities	8 lectures
7	Toy shell	8 Lectures
8	CPU Scheduler	12 lectures
9	Deadlock detection	8 lectures
10	Page Replacement Algorithms	12 lectures
11	File Allocation methods	12 Lectures

**Examination**

Internal Marks : Activity + Labbook(10+10)

External Marks : two programs(35each) oral(5) Activity(5)

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Lab Course II – Programming in Java**  
**Code No. : CS-348**

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**Aim:**

To understand the process of designing and implementing Core and Advanced Java programs.

**Objective :-**

1. Implement core Java programs to solve simple problems
2. Implement Client and Server end Java programs

**Syllabus**

Sr. No	Topic	Lectures
<b>Core and Advanced Java</b>		
1	Simple Java programs	8 Lectures
2	Arrays and Packages	8 Lectures
3	Inheritance and Interfaces	8 Lectures
4	Exception Handling	8 Lectures
5	File Handling	8 Lectures
6	GUI designing & Event Handling	8 Lectures
7	Database Programming	8 Lectures
8	Multithreading	4 Lectures
9	Collection	8 Lectures
10	Servlets	8 Lectures
11	JSP	8 Lectures
12	Socket Programming	4 Lectures
<b>Computer Graphics</b>		
1	Simple Graphics program using OpenGL	4 Lectures
2	Using graphics primitives to display graphics	4 Lectures
3	Window to viewport transformations and other transformations	4 Lectures
4	Using simple Keyboard and Mouse interaction	4 Lectures
5	Graphics Mini project	16 Lectures

**Examination**

Internal Marks : Activity(CG) + Seminar(Enhanced java+ listening) (10+10)

External Marks : two programs(30each) oral(5) Activity(5)+ Labbook(10)

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**Proposed Draft of**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Lab Course III – Programming in PHP & Project**  
**Code No. : CS-349**

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**Aim:**

To understand the process of designing and implementing Web applications, using PHP.

**Objective :-**

1. Implement Simple PHP programs to solve simple problems

**Syllabus**

Sr. No	Topic	Lectures
<b>PHP</b>		
1	String manipulation	8 Lectures
2	Arrays	8 Lectures
3	Inheritance	8 Lectures
4	File Handling	8 Lectures
5	Form designing	8 Lectures
6	Database Connectivity	8 Lectures
7	Sessions and cookies	8 Lectures
8	Java script with AJAX	8 Lectures
<b>Networking</b>		
1	Setting a LAN Environment	4 Lectures
2	Configuring the Server	4 Lectures
3	Use of Service Primitives	4 Lectures
4	Use of Networking Tools	12 Lectures
<b>Project</b>		
1	Choose Project topic and Prepare problem description	
2	Study of Existing System	
3	Identifying users and functionalities of proposed system	
4	Preparing the Design of the proposed system- Data Design Screen and Report Designs	
5	Implementation	

**Examination**

Internal Marks: Project (20) Continuous Evaluation.

External Marks: One programs (30) ( large program on PHP + small program PHP), networking(10)  
 – Internal, Lab book(10), Project(30) -20 Marks External + 10 Marks Internal for Project Demo  
 before Final Practical Exam



UNIVERSITY OF PUNE

Revised Course Structure of English

**F. Y. B. A. Compulsory English (w. e. f- 2013-2014)**

**Prescribed Text: *Visionary Gleam: A Selection of Prose and Poetry* (Board of Editors- Orient Blackswan)**

**Objectives**

- a) To familiarize students with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English
- b) To expose them to native cultural experiences and situations in order to develop humane values and social awareness
- c) To develop overall linguistic competence and communicative skills of the students

**Term-I**

Prose- 1, 2, 3, 4

Poetry- 9, 10, 11

Grammar- 1, 2, 3

Communication Skills- 1,2,3,4,5

**Term-II**

Prose- 5, 6, 7, 8

Poetry- 12, 13, 14

Grammar- 4, 5

Communication Skills- 6,7,8,9,10

**Prose**

1. **An Astrologer's Day**- R.K Narayan
2. **Our Urgent Need of Self-esteem**-Nathaniel Branden
3. **The Gift of Magi**- O' Henry
4. **Karma**-Khushwant Singh
5. **Tryst with Destiny**-Jawaharlal Nehru
6. **Youth and the Tasks Ahead**-Karan Singh
7. **Prospects of Democracy in India**-B. R. Ambedkar
8. **The Eyes are not Here**-Ruskin Bond

## **Poetry**

9. **A Red, Red Rose**- Robert Burns
10. **Where the Mind is without Fear**- Rabindranath Tagore
11. **If You Call Me**- Sarojini Naidu
12. **Upon Westminster Bridge**- William Wordsworth
13. **An old Woman**- Arun Kolatkar
14. **Success is Counted Sweetest**- Emily Dickinson

## **Grammar and Communication Skills**

### **Grammar:**

#### **1. Articles**

#### **2. Prepositions**

#### **3. Verbs**

##### **3.1 Regular and Irregular Verbs**

##### **3.2 Auxiliaries (Primary and Modal)**

#### **4. Tenses**

**4.1 Present tense**- A) Simple present, B) Present progressive, C) Present perfect, D) Present perfect progressive

**4.2 Past tense**- A) Simple past, B) Past progressive, C) Past perfect, D) Past perfect progressive

**4.3 Future tense**- - A) Simple future, B) future progressive, C) Future perfect, D) Future perfect progressive

#### **5. Subject-Verb Agreement (Concord)**

### **Communication skills:**

#### **1. Taking Leave**

#### **2. Introducing Yourself**

#### **3. Introducing People to One Another**

#### **4. Making Requests and Asking for Directions**

#### **5. Making and Accepting an Apology**

- 6. Inviting and Accepting/Declining an Invitation**
- 7. Making a Complaint**
- 8. Congratulating, Expressing Sympathy and Offering Condolences**
- 9. Making Suggestions, Offering Advice and Persuading**
- 10. Expressing Agreement/Disagreement and Seeking Clarification**

**Question paper pattern of the course will be given in due course of time**

## **F. Y. B. A. Optional English (General Paper-I) (w. e. f- 2013-2014)**

**Prescribed Text: *Interface: English Literature and Language* (Board of Editors- Orient Blackswan)**

### **Objectives**

- a) To expose students to the basics of literature and language
- b) To familiarize them with different types of literature in English, the literary devices and terms so that they understand the literary merit, beauty and creative use of language
- c) To introduce the basic units of language so that they become aware of the technical aspects and their practical usage
- d) To prepare students to go for detailed study and understanding of literature and language
- e) To develop integrated view about language and literature in them

### **Term-I**

#### **Prose**

1. **A Lesson My Father Taught Me-** A.P.J. Abdul Kalam
2. **Toasted English-** R. K. Narayan

#### **Short Stories**

1. **The Romance of a Busy Broker-** O. Henry
2. **A Day's Wait-** Ernest Hemingway

#### **Poetry**

1. **Sonnet 29: 'When in disgrace with Fortune and men's eyes'**- William Shakespeare
2. **The World is too much with us-** William Wordsworth

3. **The Listeners-** Walter de la Mare
4. **No Men are Foreign-** James Kirkup

### **Language studies-I**

1. **Characteristics of Human Language**
2. **Functions of Language**

### **Term-II**

### **Short Stories**

1. **Upper Division Love-** Manohar Malgaonkar
2. **Marriage is a Private Affair-** Chinua Achebe

### **Poetry**

1. **The Road Not Taken-** Robert Frost
2. **The Sun Rising-** John Donne
3. **The Mountain and the Squirrel-** R. W. Emerson
4. **Ballad of the Landlord-** Langston Hughes

### **One Act Plays**

1. **Lithuania-** Rupert Brooke
2. **Swansong -** Anton Chekhov

### **Language studies-II**

1. **Aspects of Language and Branches of Linguistics**
2. **Introduction to the Sounds of English**

*Question paper patterns of the course will be given in due course of time.*



University of Pune  
First Year B.A.  
History General Paper No. 1  
Chh. Shivaji and His Times  
(1630 – 1707)

Objectives :

To Introduce innovative study techniques in the study of History of Maratha to make it value based, conceptual and thought provocative. To introduce International elements in the study of Marathas to facilitate comparative analysis of this history. To highlight the importance of past in exploration of present context. To understand the Socio –economic, cultural and political background of 17<sup>th</sup> century Maharashtra. To increase the spirit of healthy Nationalism & Secularism among the student. To encourage student s to for competitive examinations. To promote interest in the discipline of History. Suggesting the Importance of References.

First Term-

- |  |                       |
|--|-----------------------|
| 1. Sources.  | 10                    |
| A) Literary Sources.                               |                       |
| 1) Sanskrit  |                       |
| 2) Marathi   |                       |
| 3) Hindi   |                       |
| 4) Persian   |                       |
| B) Foreign Sources.                                |                       |
| 1) Portuguese                                      |                       |
| 2) Dutch   |                       |
| 3) French  |                       |
| 4) English   |                       |
| C) Travellers Accounts.                            |                       |
| 2. Conceptual study of Chh. Shivaji and his times. | 7                     |
| 1) Bhakti.   | 2) Watan              |
| 3) Saranjam .                                      | 4) Mansab             |
| 5) Jahagir   | 6) Jiziya             |
| 7) Guerrilla Warfare                               | 8) Maharashtra Dharma |

- |               |                   |
|---------------|-------------------|
| 9) Shiledars  | 10) Swarajya      |
| 11) Chauth    | 12) Inam          |
| 13) Baragirs. | 14) Sardeshmukhi. |

- |   |    |
|---|----|
| 3. Rise and Consolidation of Maratha power. | 13 |
| 1) Establishment of the Swarajya            |    |
| 2) Shivaji - Adilashahi Relations           |    |
| 3) Shivaji - Mughal Relations               |    |
| 4) Shivaji's Coronation.                    |    |
| 5) Karnataka Expedition.                    |    |
| 4. Administration Under Chh. Shivaji        | 8  |
| 1) Central                                  |    |
| 2) Provincial                               |    |
| 3) Military                                 |    |
| 4) Judiciary.                               |    |
| 5. Chh. Shivaji & Foreign Powers.           | 10 |
| 1) Portuguese.                              |    |
| 2) Dutch.                                   |    |
| 3) French.                                  |    |
| 4) British.                                 |    |

Second Term.

- |  |    |
|--|----|
| 6. Chh. Sambhaji's Achievements  | 10 |
| 1) Consolidation of power.   |    |
| 2) Relations with Mughals.   |    |
| 3) Relations with Foreign Powers.  |    |
| 4) Evaluation.   |    |
| 7. Maratha War of Independence .   | 10 |
| 1) Chh. Rajaram and his Achievements.  |    |
| 2) Maharani Tarabai & her Achievements.                                      |    |
| 3) Contribution of Santaji Ghorpade, Dhanaji Jadhav & Ramchandrapant Amatya. |    |



8. Social Life.	10
1) Gavgada.	
2) Woman	
3) Religious	
9. Economic Life.	10
1) Agriculture And Revenue System	
2) Sources of income	
3) Trade & Commerce	
4) Currency	
10. Arts & Architecture .(Special Ref. to Temple, Gadhi, and Forts)	8

Books for Study :

1. M.G. Ranade-Rise of the Maratha Power.
2. G.S. Sardesai-New History of the Marathas, Vols. I, II and III.
3. J.N. Sarkar-Shivaji and His Times.
4. S.N. Sen-Administrative System of the Marathas.
5. S.N. Sen-Military System of the Marathas.
6. Nadkarni R. V. –Rise and fall of the Maratha Empire.
7. Sarkar J.N.-House of Shivaji.
8. Dr. Balkrishna – Shivaji the Grate.
9. Pagadi Setu Madhavrao – Chh. Shivaji

मराठी ग्रंथ :

१. अ.रा. कुलकर्णी व ग.ह. खरे (संपा.)—मराठ्यांचा इतिहास, खंड १ त ३.
२. प्र.न. देशपांडे—मराठी सत्तेचा उदय आणि उत्कर्ष.
३. वा.कृ. भावे—शिवराज्य व शिवकाल.
४. बेंद्रे, वा.सी. — शिवाजी महाराजांचे विधिचिकित्सक चरित्र.
५. रामचंद्र पंत अमात्य — आज्ञापत्र.

६. सौ.कमल गोखले — शिवपुत्र संभाजी.
  ७. काळे, दि.वि.—छत्रपती शिवाजी महाराज.
  ८. शहा, जी.बी. — उपेक्षित दुर्ग, भाग एक व दोन
  ९. तांबोळी, एन.एस. — मराठयांचा इतिहास
  १०. चिटणिस, कृ.ना. — मध्ययुगीन भारतीय संस्था व संकल्पना, खंड १ ते ४.
  ११. पवार जयसिंगराव — मराठी सत्तेचा उदय व उत्कर्ष
  १२. सावंत, व जाधव — मराठयांचा प्रशासकिय, सामाजिक व आर्थिक इतिहास
  १३. कदम उमेश — मराठा—फ्रेंच संबंध
  १४. पिसुर्लेकर पांडुरंग — मराठा—पोर्तुगीज संबंध
  १५. बेंद्रे. वा.सी. — छत्रपती संभाजी महाराजांचे विचिकित्सक चरित्र
  १६. पवार जयसिंगराव — महाराणी ताराबाई
  १७. शिवदे सदाशिव — महाराणी ताराबाई
  १८. पवार जयसिंगराव — संताजी घोरपडे स्मारक ग्रंथ
  १९. कुलकर्णी, अ.रा. — शिवकालीन महाराष्ट्र
  २०. माटे, म.श्री. — मराठे कालीन वास्तूकला
  २१. पाटील आर.ए. — मराठयांचा इतिहास
  २२. सरदेसाई गो.स. — मराठी रियासत, खंड १ ते ३
  २३. कठारे अनिल व घोडके जयश्री — शिवकालीन महाराष्ट्र
-

University of Pune

First Year B.A.

History of Civilization : Cultural History of Maharashtra (upto 13<sup>th</sup> century)

Objectives

1. To introduce the student to the culture of Maharashtra from ancient times onwards.
2. To create a sense of pride in the student about his cultural tradition.
3. To highlight how this regional cultural identity forms a part of the main flow of the Indian cultural tradition.
4. To restructure the value based syllabus.
5. To get acquainted with basic concepts, theories and methodology of social philosophy.
6. New thoughts, trends and ideologists should be included and knowledge extension needs to be taken into consideration.

First Term

12

1. Civilization

1. Concept & scope of civilization
2. Geographic identity of Maharashtra
3. Nomenclature of Maharashtra
4. Origin of Marathi language

2. Maharashtra Culture

12

1. Concept & scope of civilization
2. Cultural identity of Maharashtra
3. Proto historic culture – Dayamabad, Nevase, Inamgaon
4. Megalithic culture

3. Political outline

12

1. Satvahan
2. Vakatak
3. Rashtrakut
4. Chhatrap
5. Shilahar
6. Yadav

4. Social Life 12
  1. Caste System
  2. Village Life
  3. Position of Women
  4. Fairs & Festivals

#### Second Term

5. Economic life 12
  1. Agriculture
  2. Trade and commerce
6. Art and Architecture 12
  1. Sculpture, Painting, Folk Arts
  2. Caves, Forts and temples
7. Bhakti Cult – Philosophy and teaching 12
  1. Nath
  2. Mahanubhav
  3. Varkari
  4. Shakti
8. Literature – A brief survey 12
  1. Sanskrit, Spl. Ref. to Manassollas
  2. Prakrit, Spl. Ref. to Gatha Saptshati
  3. Apabramsha, Spl. Ref. to Jain Agam
  4. Marathi, Spl. Ref. to Jyotish Ratnamala, Lila Charitra, Vivek Sindu

#### Books for Study :

1. Gokhale B.G., Buddhism in Maharashtra, Popular Prakashan, Mumbai, 1976.
2. Mate M.S., Maratha Architecture, Mansanman Publication, Pune.

#### मराठी

१. जोगळेकर ग.ना. (संपा), गाथासप्तशती
२. साखरे विजया — वाकाटक कला

३. साखरे विजया — पुरातत्व विद्या.
४. कठारे अनिल व साखरे विजया — भारतीय कलेचा इतिहास.
५. कुलकर्णी गो.त्रं., मध्ययुगीन महाराष्ट्राचा इतिहास इ.स. १२९६—१६३६, महाराष्ट्र राज्य साहित्य संस्कृती मंडळ, मुंबई, २००१.
६. केतकर श्री.व्यं., प्राचीन महाराष्ट्र, वरदा प्रकाशन, पुणे, १९८९.
७. जाधव रा.ग. संपा., विचारशिल्प, कॉन्टिनेन्टल प्रकाशन, पुणे, १९९४.
८. जोशी महादेवशास्त्री, गाजती दैवते, ज्ञानराज प्रकाशन, पुणे १९५९.
९. जोशी वसंत (संपा), मराठी संस्कृती काही समस्या, व्हीनस प्रकाशन, पुणे १९८०.
१०. डिसकळकर द.बा., महाराष्ट्राचा प्राचीन इतिहास आणि संस्कृति, पुणे विद्यापीठ, पुणे, १९६७.
११. ढेरे रा.चिं., नाथ संप्रदायाचा इतिहास, पद्मगंधा प्रकाशन, पुणे, २००१.
१२. ढेरे रा.चिं., महाराष्ट्राचा देव्हारा, विश्वकर्मा प्रकाशन, पुणे १९७६.
१३. तुळपुळे शं.गो., प्राचीन मराठी कोरीव लेख, पुणे विद्यापीठ प्रकाशन, पुणे, १९६३.
१४. दांडेकर गो.नी., महाराष्ट्र दर्शन, मृण्मयी प्रकाशन, पुणे, २००१.
१५. पाठक अ.शं. संपा., इतिहास: प्राचीन काळ खंड १, दर्शनिका विभाग, मुंबई २००२.
१६. पाठक अ.शं. संपा., महाराष्ट्र: इतिहास प्राचीन काळ खंड १, भाग २ स्थापत्य व कला, दर्शनिका विभाग, मुंबई २००२.
१७. माटे म.श्री., प्राचीन भारतीय कला, कॉन्टिनेन्टल प्रकाशन, पुणे.
१८. सोवनी म.वि., महाराष्ट्राच्या कालमुद्रा, नितीन प्रकाशन, पुणे, १९८३.
१९. सहस्रबुध्दे पु.ग., महाराष्ट्र संस्कृती, कॉन्टिनेन्टल प्रकाशन, पुणे, १९७९.
२०. शेणोलीकर ह.श्री. व देशपांडे प्र.न. — महाराष्ट्र संस्कृती.
२१. पानसे मु.ग. — यादवकालीन महाराष्ट्र.
२२. ढवळीकर म.के. — महाराष्ट्राची कुळकथा
२३. सांकलिया (संपा) — महाराष्ट्राचे पुरातत्व

२४. देव शं.भा. — पुरातत्व विद्या
२५. ढवळीकर म.के. — महाराष्ट्राची पुरातत्व विद्या.
२६. अत्रे शुभांगणा — महाराष्ट्र संस्कृती.
२७. गोखले शोभना — पुराभिलेख विद्या.
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# **University of Pune**

**BOARD OF STUDIES IN ECONOMICS**

## **F.Y.B.A. Economics Revised Syllabus (From June - 2013)**

**G-1 Indian Economy – Problems and Prospects**

**OR**

**G-I Agricultural Economics**

UNIVERSITY OF PUNE

BOARD OF STUDY IN ECONOMICS

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**University of Pune**  
**F.Y.B.A. Economics Revised Syllabus.**  
**G-1 Indian Economy – Problems and Prospects**  
**(From June - 2013)**  
**Section – I**

- 1. Developing Economy. (12)**
  - 1.1 Developed and Developing Economy – Meaning & Concept.
  - 1.2 Basic Characteristics of Indian Economy as a Developing Economy.
  - 1.3 Comparison of Indian Economy with Developed Countries –
    - a) Population b) Per-capita Income c) Human Development Index.
    - d) Agriculture e) Industry f) Service Sector.
  - 1.4 Major issues of Development in India
- 2. Population . (12)**
  - 2.1 Theory of Demographic Transition.
  - 2.2 Size and Growth of Population.
  - 2.3 Features of Indian population
    - 2.3.1 Sex Composition.
    - 2.3.2 Rural Urban Distribution.
    - 2.3.3 Age Composition.
    - 2.3.4 Density of Population.
    - 2.3.5 Occupational Distribution.
    - 2.3.6 Quality of Population.
  - 2.4 Causes of growing Population.- High Birth rate and Decreasing Death rate.
  - 2.5 Problems of Over Population
  - 2.6 Measures for Population Control.
  - 2.7 Population Policy 2005 onward
- 3. Poverty and Unemployment (12)**
  - 3.1 Meaning and Concept of Poverty.
  - 3.2 Poverty line- Need of redefining.
  - 3.3 Measurement of Poverty.
  - 3.4 Causes of Poverty.



- 3.5 Measures of eradication of Poverty.
- 3.6 Unemployment – Nature & Types, Causes & Measures

**4. Agriculture. (12)**

- 4.1 Place of Agriculture in Indian economy.
- 4.2 Agricultural Productivity – Causes of Low Productivity & Measures.
- 4.3 Green Revolution- Achievements & Failures.
- 4.4 Sources of Agricultural Finance.
- 4.5 Agricultural Marketing – Defects & Measures.
- 4.6 Suicide of Farmer's - Causes and Measures to prevent Farmer's Suicide
- 4.7 Special Economic Zone- Concept, Features, Problems.

**Section – II**

**5. Industry. (12)**

- 5.1 Role of Industrialization.
- 5.2 Industrial Policy – 1991.
- 5.3 New Economic Reforms – Concept
  - i) Liberalization ii) Privatisation, iii) Globalization
- 5.4 Small and Large Scale Industry – Growth and Problems.
- 5.5 Growth of Knowledge Based Industry – IT, Software Consultancy.

**6. Labour. (12)**

- 6.1 Meaning and Classification of Labour.
- 6.2 Characteristics of Industrial Labour.
- 6.3 Industrial Dispute :- Causes, Measures for Settlement.
- 6.4 Social Security Measures in India.

**7. Planning. (12)**

- 7.1 Meaning, Concept, Need and Objectives.
- 7.2 Types of Planning – Merits and Demerits.
- 7.3 Objectives, Achievements, and Failures of 11<sup>th</sup> Five Year Plan.
- 7.4 Objectives, of 12<sup>th</sup> five year plan

**8. Economy of Maharashtra. (12)**

- 8.1 Salient Features of Economy of Maharashtra.
- 8.2 Co-operative Movement – Progress, Problems & Prospectus.

8.3 Role of Co-operative in Economic Development of Maharashtra.

8.4 Regional Imbalance Causes & Preventive Measures.

8.5. Water Management concept and utility

### **Basic Reading List**

- Gaurav Datta Ashwani Mahajan (2012), Indian Economy. S. Chand & Company Ltd., New Delhi.
- Misra & Puri - (2011) Indian Economy, Himalaya Publication house, Mumbai.
- Gopal and Suman Banhri (2013) Indian Economy Performance and Policies. Pearson Publication Delhi.
- Prakesh B.A. (2011) The Indian Economy Since 1991 Economic Reforms and performance, Pearson Publication Delhi.
- **Reference Books**
- Tandon - Indian Economy.
- Dhar P.K., Indian Economy.
- Agrawal A.N., Problems of Development & Planning.
- Memoria C.B. Agricultural Problems of India, Kitab Mahal Publication. Kitab mahal, New Dehli.
- Dr. Datir R.K. And others Bharatiya Arthvyavastha- 5<sup>th</sup> Edition 2012, Nirali prakashan Pune.
- Jalan B.,The Indian Economy Problem and prospectus, Viking, New Dehli
- Planning Commission (2007), Eleven Five Year Plan (2007-12).
- Govt. of India – Economic Survey.
- World Bank – World Development Report.
- Census of India (2001),
- C.S.O. National Account Statistics.

**University of Pune**  
**F.Y.B.A Economics- General Paper - I**  
**G-I Agricultural Economics**  
**(From June 2013)**  
**Section – I**

- 1) Introduction (10)**
- 1.1 Agricultural Economics - Meaning, Nature, Scope and Importance
  - 1.2 Role of Agriculture in Economic Development
  - 1.3 Trends in Agricultural Growth since 1950-51
- 2) Development of Agriculture (14)**
- 2.1 Agricultural Productivity – Meaning and concept
    - 2.1.1 Causes of Low Productivity and Measures.
    - 2.1.2 Regional Variations, Comparison with Developed Countries,
  - 2.2 Green Revolution – Achievement and Failures. Need of second Green Revolution
  - 2.3 Changes in Cropping Pattern
  - 2.4 Organic Farming – Meaning & Scope
- 3. Recent Issues in Indian Agriculture (12)**
- 3.1 Environmental Issues
  - 3.2 Special Economic Zone (SEZ) - Impact on Agriculture.
  - 3.3 Farmers Suicide – Causes & Preventive Measures.
  - 3.4 Agriculture Price Policy.
  - 3.5 Issues on Agriculture - Food Security.
- 4. Agricultural Marketing (12)**
- 4.1 Problems and Remedies of Agricultural Marketing in India.
  - 4.2 Co- operative Marketing – Merits and demerits.
  - 4.3 Market Model Act 2007.
  - 4.4 Agricultural Export and Import –policies since 2009
  - 4.5 Foreign direct investment in Agriculture

**Section – II**

- 5. Agricultural Labour (12)**
- 5.1 Agricultural Labour - Meaning and concept.
  - 5.2 Features of Agricultural Labour.
  - 5.3 Type of Agricultural Labour
  - 5.4 Minimum Wages Act.
  - 5.5 National Rural Employment Guaranty Scheme.- Nature & Evaluation
- 6) Agricultural Finance (12)**
- 6.1 Importance of Agricultural Finance
  - 6.2 Sources of Agricultural Finance
  - 6.3 Problems of Agricultural Finance
  - 6.4 Role of NABARD in Agricultural Finance
  - 6.5 Role of Micro Finance

**7) Irrigations and Agricultural Inputs (12)**

- 7.2 Importance of Irrigations in Agriculture
- 7.2 Type of Irrigation – Traditional Advanced
- 7.3 . Type of New Irrigation System -Benefits of New of Irrigation
- 7.4 Role of Farmer in Water Management
- 7.5 Drought –Reason and Remedies

**8) WTO and Indian Agriculture (12)**

- 8.1 WTO – Objectives and Functions.
- 8.2 WTO- Agreement on Agricultural, Patent Policy
- 8.3 WTO-Impact on Indian Agriculture

**Basic Reading List**

- Dalt.R.& K.P.M.Sundharm (2011), Indian Economy , S.Chand & Co.Ltd New Delhi
- Misra S.K. & V.K.Puri (2011), Indian Economy Himalaya Publication house Mumbai
- Sadhu A.N. and J.Sing, Agricultural Problems in India, Himalaya Publishing House Mumbai
- Sundarm I.S. Rural Development Himalaya Publishing House Mumbai

**Additional Reading List**

- Gopal and Suman Banhri (2013) Indian Economy Performance and Policies. Pearson Publication Delhi.
- Dr. Datir R.K. And others Bharatiya Arthvyavastha- 5<sup>th</sup> Edition 2012, Nirali prakashan Pune.
- GoMamoria C-D : Agricultural Problem of India Kitab Mahal 2005
- Government of India ,Economic Survey New Delhi
- RBI,Hand Book of statistics of India.

UNIVERSITY OF PUNE

Revised Course Structure of English

S. Y. B. A. Compulsory English (w. e. f- 2014- 2015)

(1) Objectives

1. To develop competence among the students for self-learning
2. To familiarize students with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English
3. To develop students' interest in reading literary pieces
4. To expose them to native cultural experiences and situations in order to develop humane values and social awareness
5. To develop overall linguistic competence and communicative skills of the students

(2) Course Content

**Prescribed Text: *Literary Landscapes* (Ed. Board of Editors, Orient Blackswan)**

**Literature Components**

1. Playing the English Gentleman- *Mohandas Karamchand Gandhi*
2. The Homecoming- *Rabindranath Tagore*
3. A Letter by Hazlitt to His Son- *William Hazlitt*
4. Freedom of the Press- *Shashi Tharoor*
5. A Cup of Tea- *Katherine Mansfield*
6. The Last Leaf- *William Sydney Porter*
7. Kalpana Chawla
8. My Lost Dollar- *Stephen Leacock*
9. The Quality of Mercy- *William Shakespeare*
10. The Village Schoolmaster- *Oliver Goldsmith*
11. The Solitary Reaper- *William Wordsworth*
12. O Captain! My Captain!- *Walt Whitman*
13. Laugh and Be Merry- *John Masefield*
14. Still I Rise- *Maya Angelou*
15. Another Woman- *Imtiaz Dharker*
16. My Grandmother's House- *Kamala Suraiyya Das*

## **Language Components**

### **1. Vocabulary**

- Introduction
- Collocations: Words that go together
- Phrasal verbs
- Commonly confused words
- One-word substitutes
- Idioms

### **2. Grammar**

- The passive voice
- Direct and indirect speech
- Negative sentences
- Question tags
- Simple, compound and complex sentences

### **3. Written Communication**

- Paragraph writing
- Report writing
- Letter writing

## **Term-wise division of the syllabus:**

### **Term-I**

#### **Literature components**

**Unit – 1 to 4 and 9 to 12**

#### **Language components**

##### **1. Vocabulary**

##### **2. Grammar**

*(The passive voice and  
Direct and indirect speech only)*

### **Term-II**

#### **Literature components**

**Unit – 5 to 8 and 13 to 16**

#### **Language components**

2. Grammar: *(Negative sentences, Question Tags, Simple, compound and complex sentences only)*
3. Written Communication

## Question Paper Pattern (Term-End Exam)

**Time:- Two Hours**

**Total Marks:- 60**

- Q 1. Attempt any One from (A) and One from (B) in about 100 words each  
(Questions on prose units 01 and 02) Marks 12
- Q 2. Attempt any One from (A) and One from (B) in about 100 words each  
(Questions on prose units 03 and 04) Marks 12
- Q 3. Attempt any One from (A) and One from (B) in about 100 words each Marks 12  
(Questions on unit no 9,10,11,12)
- Q 4. Refer to the context (**any three**) Marks 12  
(Unit no 9,10,11,12)
- Q5. A) Questions on Vocabulary (**any eight**) Marks 08  
B) Questions on Grammar (Passive voice, Direct/Indirect speech) (**any Four**) Marks

04

(Questions should be based on the exercises given at the end of each unit of the prescribed textbook)

## Question Paper Pattern (Annual Exam)

**Time:- Three Hours**

**Total Marks:- 80**

- Q 1. Attempt any One from (A) and One from (B) in about 150 words each  
(Questions on prose units 01 to 04- First term) Marks 16
- Q 2. Attempt any One from (A) and One from (B) in about 150 words each  
(Questions on poetry units 09 to 12- First term) Marks 16
- Q. 3) Attempt any One from (A) and One from (B) in about 150 words each  
  
(Questions on prose unit no. 5 to 8 of the second term) Marks 16
- Q. 4) Attempt any One from (A) and One from (B) in about 150 words each  
  
(Questions on poetry unit no. 13 to 16 of the second term) Marks 16
- Q5. A) Questions on Grammar (excluding first term items) (Any six ) Marks 06  
B) Written communication (Any two) Marks 10

UNIVERSITY OF PUNE

Revised Course Structure of English

**S. Y. B. A. General English (G-2) (w. e. f- 2014- 2015)**

**Title of the Paper: Study of English Language and Literature**

**(1) Objectives:**

- a) To expose students to the basics of short story, one of the literary forms
- b) To familiarize them with different types of short stories in English
- c) To make them understand the literary merit, beauty and creative use of language
- d) To introduce some advanced units of language so that they become aware of the technical aspects and their practical usage
- d) To prepare students to go for detailed study and understanding of literature and language
- e) To develop integrated view about language and literature in them

**(2) Course content:**

**Prescribed Texts:** 1) *Rainbow: A Collection of Short Stories*

Ed. Board of Editors, Orient Blackswan

2) *Linguistics: An Introduction*

Ed. Board of Editors, Orient Blackswan

**1) *Rainbow: A Collection of Short Stories***

Introduction

*What is literature?*

*Examining some literary devices*

*Plato and mimesis*

*Components of a literary piece and approaches to literature*

*Elements of the short story*

*Short story: A short history*

*Short story: The genre*

1. The Three Questions- *Lev Nikolayevich Tolstoy*
2. Mother of a Traitor- *Maxim Gorky*
3. The Bet- *Anton Chekhov*
4. My Uncle Jules- *Guy de Maupassant*
5. The Bottle Imp- *R. L. Stevenson*
6. After Twenty Years- *O. Henry*
7. Lawley Road- *R. K. Narayan*
8. The Open Window- *Hector Hugh Munro*
9. Kabuliwallah- *Rabindranath Tagore*



10. A Signal Man- *Charles Dickenson*

**2) Linguistics: An Introduction (Only Part – I Prescribed for SYBA General English)**

**1. Phonology:**

- Organs of speech, speech mechanisms,
- Description and classification of consonants and vowels,
- Concept of syllable,
- Word accent, sentence accent,
- Tone groups, placement of nuclear/tonic accent,
- Concept of intonation, uses/types of tones

**2. Morphology:**

- What is morphology?
- Concept of morpheme, allomorph, zero allomorph, types of morphemes (free and - bound), Prefixes and Suffixes (class-changing and class-maintaining),
- Inflectional and Derivational suffixes

**3. Sociolinguistics:**

- National varieties of English: British, American and Indian
- Regional and social dialects, standard dialect, concept of register, formal and informal styles
- Pidgins and Creoles, code-switching and code mixing, borrowings

**Term-wise division of the syllabus:**

**Term-I**

1. Introduction (to the form of Short Story etc.)
2. Stories from-**Rainbow : 01 to 05**
3. Phonology part from- **Linguistics: An Introduction**

**Term-II**

1. Stories from- **Rainbow : 06 to 10**
2. Morphology part from- **Linguistics: An Introduction**
3. Sociolinguistics part from- **Linguistics: An Introduction**

## Question Paper Pattern (Term-End Exam)

**Time: Two Hours**

**Total Marks: 60**

- Q. 1) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on Introduction to the **form of Short Story**) Marks 12
- Q. 2) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on **Short Stories prescribed** for the First term) Marks 12
- Q. 3) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on **Short Stories prescribed** for the First term) Marks 12
- Q. 4) A) Write short notes on the following (Any 2 out of 4)  
(Questions on **Phonology part, prescribed** for the Ist term) Marks 12
- Q.5) Practical/objective questions on **Phonology prescribed** in the Ist term as under:
- A) Transcribe the following words according to RP (4 out of 6) Marks 04  
(Only monosyllabic/disyllabic words to be given for transcription)
- B) Fill in the blanks (4 out of 6) Marks 04
- C) Do as directed (4 out of 6) Marks 04  
(Practical questions like : Identifying, Giving examples, Placing word accent, Showing tone group division etc can be asked in this section)

## Question Paper Pattern (Annual Exam)

**Time:- Three Hours**

**Total Marks:- 80**

- Q. 1) A) Attempt any 1 out of 2 questions in about 100 words each  
(Questions on Introduction to the **form of Short Story**) Marks 08
- B) Attempt any 1 out of 2 questions in about 100 words each  
(Questions on **Short Stories prescribed** for the Ist term) Marks 08
- Q. 2) Short notes on any 4 out of 6 questions in about 100 words each  
(Questions on **Phonology part, prescribed** for the Ist term) Marks 16
- Q. 3) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on **Short Stories prescribed** for the IInd term) Marks 16
- Q. 4) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on **Morphology** prescribed in the IInd term) Marks 16
- Q.5) Attempt any 2 out of 4 questions in about 100 words each  
(Questions on **Sociolinguistics** prescribed in the IInd term) Marks 16

UNIVERSITY OF PUNE

Revised Course Structure of English

**S. Y. B. A. Special Paper-I (S-1) (w. e. f- 2014- 2015)**

**Title of the Paper: Appreciating Drama**

**(1) Objectives:**

1. To acquaint and familiarize the students with the terminology in Drama Criticism (i.e. the terms used in Critical Analysis and Appreciation of Drama)
2. To encourage students to make a detailed study of a few sample masterpieces of English Drama from different parts of the world
3. To develop interest among the students to appreciate and analyze drama independently
4. To enhance students awareness in the aesthetics of Drama and to empower them to evaluate drama independently

**(2) Course content:**

**A) Theory of Drama**

- (a) What is Drama?
- (b) Elements of Drama: Theme, Characters, Plot, Dialogue, Stage Properties, The Three Unities, Conflict, Elements of Structure
- (c) Types of Drama: Tragedy, Comedy, Tragi-Comedy, Problem Plays, Absurd Drama
- (d) In addition, other terms related to Drama be considered for background study

- B) Texts:** 1) *The Merchant of Venice*- William Shakespeare  
2) *A Doll's House*- Henrik Ibsen  
3) *The Old Stone Mansion*- Mahesh Elkunchwar

**Term-wise division of the syllabus:**

**Term-I- A. Theory of Drama**

- B. Text-1) *The Merchant of Venice*- William Shakespeare

**Term-II- Texts:** 2) *A Doll's House*- Henrik Ibsen

- 3) *The Old Stone Mansion*- Mahesh Elkunchwar

## **Question Paper Pattern (Term-End Exam)**

**Time:- Two Hours**

**Total Marks:- 60**

- |  |          |
|--|----------|
| Q.1) Questions on the theory of drama. (3 out of 5)  | Marks 12 |
| Q.2) Questions on the theory of drama. (3 out of 5)  | Marks 12 |
| Q.3) Questions on 'The Merchant of Venice'. (1 out of 2)                                   | Marks 12 |
| Q.4) Questions on 'The Merchant of Venice'. (2 out of 3)                                   | Marks 12 |
| Q.5) Practical questions on the application of theory of the drama prescribed (4 out of 6) | Marks 12 |

## **Question Paper Pattern (Annual Exam)**

**Time:- Three Hours**

**Total Marks:- 80**

- |  |          |
|--|----------|
| Q.1) Questions on the theory of drama. (4 out of 6)  | Marks 16 |
| Q.2) Questions on 'The Merchant of Venice'. (1 out of 2)                                   | Marks 16 |
| Q.3) Questions on 'A Doll's House'. (2 out of 3)   | Marks 16 |
| Q.4) Questions on 'The Old Stone Mansion'. (2 out of 3)                                    | Marks 16 |
| Q 5 Practical questions on the application of theory of the drama prescribed (8 out of 10) | Marks 16 |

UNIVERSITY OF PUNE

Revised Course Structure of English

S. Y. B. A Special Paper-II (S-2) (w. e. f- 2014- 2015)

**Title of the Paper: Appreciating Poetry**

**(1) Objectives:**

1. To acquaint and familiarize the students with the terminology in poetry criticism (i.e. the terms used in critical analysis and appreciation of poems)
2. To encourage students to make a detailed study of a few sample masterpieces of English poetry
3. To enhance students awareness in the aesthetics of poetry and to empower them to read, appreciate and critically evaluate the poetry independently

**(2) Course Content:**

**A) Theory of Poetry**

- (a) What is poetry? Significant development in the art of poetry during major periods
- (b) Elements of poetry: Rhythm, Metre, Sound structure, Stanza Forms,
- (c) Figures of Speech, Symbols, Imagery, and other Poetic Devices like Repetition, Contrast.
- (d) Types of poetry: Elegy, Sonnet, Dramatic Monologue, Lyric, Ode, Ballad

**B) Prescribed Text: *Auroral Musings: An Anthology of English Poetry***

Ed. Board of Editors, Orient Blackswan

**Introduction**

1. The Ballad of Sir Patrick Spens
2. *Edmund Spenser*  
Men Call You Fair
3. *Sir Philip Sidney*  
O Grammar Rules
4. *William Shakespeare*  
Sonnet 130
5. *John Donne*  
Broken Heart  
Batter My Heart
6. *Andrew Marvell*  
The Coronet  
The Definition of Love

**7. John Milton**

The Invocation' (an excerpt from *Paradise Lost*)  
On His Blindness

**8. John Dryden**

Alexander's Feast: or the Power of Music; An Ode in Honor of St Cecilia's Day

**9. Alexander Pope**

Excerpt from Canto 1 of *Rape of the Lock*, 'Toilet Scene'

**10. Thomas Gray**

Ode on the Death of a Favourite Cat, Drowned in a Tub of Gold Fishes

**11. William Wordsworth**

Expostulation and Reply  
The Tables Turned  
A Slumber did my Spirit Seal

**12. Samuel Taylor Coleridge**

The Nightingale  
Kubla Khan: A Vision in Fragments

**13. P. B. Shelley**

Ode to the West Wind

**14. John Keats**

La Belle Dame Sans Merci  
Ode to Autumn

**15. Alfred, Lord Tennyson**

Ulysses

**16. Robert Browning**

My Last Duchess

**17. Matthew Arnold**

Dover Beach

**18. Dante Gabriel Rossetti**

The Blessed Damozel

**19. Thomas Hardy**

The Oxen  
To an Unborn Pauper Child

**20. G.M Hopkins**

Pied Beauty  
God's Grandeur

**21. W. B. Yeats**

Sailing to Byzantium

**22. Ralph Waldo Emerson**

Brahma

**23. Walt Whitman**

A Noiseless Patient Spider

**24. Emily Dickinson**

Because I Could Not Stop for Death

**Term-wise division of the syllabus:**

**Term-I**

1. Theory of poetry
2. From- Auroral Musings: 01 to 10

**Term-II**

From- Auroral Musings: 11 to 24

**Question Paper Pattern (Term-End Exam)**

**Textbook:- Auroral Musings**

**Time:- Two Hours**

**Total Marks:- 60**

- Q 1-** Questions on the theory of poetry (3 out of 5) [12]  
**Q 2-** Practical questions on the application of theory to the poems prescribed (4 out of 6) [12]  
**Q 3-** Theme-based questions on the poems prescribed (2 out of 3) [12]  
**Q 4-** Theme-based questions on the poems prescribed (2 out of 3) [12]  
**Q 5-** Reference to context (3 out of 5) [12]

**Question Paper Pattern (Annual Exam)**

**Time:- Three Hours**

**Total Marks:- 80**

- Q-1-** Questions on the poems prescribed for the first term (3 out of 5) [16]  
**Q 2-** Questions on the poems prescribed for the first term (3 out of 5) [16]  
**Q 3-** Practical questions on the application of theory to the poems prescribed for the second term (2 out of 3) [16]  
**Q 4-** Theme-based questions on the poems prescribed for the second term (2 out of 3)[16]  
**Q 5-** Reference to context- poems prescribed for the second term (4 out of 6 ) [16]





**UNIVERSITY OF PUNE**  
**Revised structure of Syllabus for B.A. Geography to be effective from**

**F.Y.B.A. – June, 2013**

**S.Y.B.A. – June, 2014**

**T.Y.B.A. – June, 2015**

<b>F.Y.B.A.</b>		
<b>G-1</b>	<b>Gg-110</b>	<b>Elements of Geomorphology</b>

<b>S.Y.B.A.</b>		
<b>G-2</b>	<b>Gg-210</b>	<b>Elements of Climatology and Oceanography</b>
		<b>OR</b>
<b>G-2</b>	<b>Gg-210</b>	<b>Geography of Disaster Management</b>
<b>S-1</b>	<b>Gg-220</b>	<b>Economic Geography</b>
		<b>OR</b>
<b>S-1</b>	<b>Gg-220</b>	<b>Tourism Geography</b>
<b>S-2</b>	<b>Gg-201</b>	<b>Fundamentals of Geographical Analysis</b>



## Equivalence of Syllabus in Geography (S.Y.B.A.)

Effective from June 2014

Old Syllabus (June 2009)		New Syllabus (June 2014)		Equivalent (Yes / No)
Gg-210	Geography of Human Resources	Gg-210	Elements of Climatology and Oceanography	No
Gg-210	Geography of Natural Hazards	Gg-210	Geography of Disaster Management	Yes
Gg-220	India: A Geographical Analysis	Gg-220	Economic Geography	No
Gg-220	China: A Geographical Analysis	Gg-220	Tourism Geography	No
Gg-201	Fundamentals of Geographical Analysis	Gg-201	Fundamentals of Geographical Analysis	Yes

## Structure /Pattern of syllabus- S.Y.B.A

1. Title of the course – **Gg- 210- Elements of Climatology and Oceanography (G-2)**
2. Preamble of the syllabus
  - i. To introduce the students to the basic principles and concepts in Climatology and Oceanography.
  - ii. To acquaint the students with the applications of Climatology and Oceanography in different areas and environment.
  - iii. To make the students aware of the Planet Earth and thereby to enrich the student's knowledge.
3. Introduction: Pattern –**Annual (20 marks internal, 80 marks University)**
4. Eligibility- **F.Y.B.A. pass**
5. Examination-

A. Pattern of examination-

**i Internal term end and University exam,**

**ii. Pattern of question paper- 20 : 80**

**Internal Exam- 60 Marks = (converted to 20 marks)**

**University Exam- 80 Marks =**

**B. Standard of passing- Internal -08- University -32= Annual marks 40**

**C. ATKT rules- Yes**

**D. Award of class- S.Y.B.A. Pass**

**E. External students- S.Y.B.A. Pass**

**F. Setting of question papers / pattern of question paper**

**Internal Exam- 60 Marks = (converted to 20 marks)**

Question 1. Answers in 20 words- 14marks (any 7 out of 10)

Question 2. Answers in 50 words -08 marks (any 2 out of 4)

Question 3. Answers in 150 words- 18 marks (any 3 out of 5)

Question 4. Answers in 300 words- 20 marks (any 1 out of 2)

**University Exam- 80 Marks =**

Question 1. Answers in 20 words- 20 marks (any 10 out of 15)

Question 2. Answers in 50 words -10 marks (any 2 out of 4)

Question 3. Answers in 150 words- 20 marks (any 2 out of 4)

Question 4. Answers in 300 words- 30 marks (any 2 out of 4)

**G. Verification / Revaluation- Yes**

6. Structure of the Course

**a. Compulsory paper- S.Y.B.A. General**

- b. Optional paper- **Yes**
  - c. Question paper and papers etc - **One**
  - d. Medium of instructions- **Marathi and English**
7. Equivalence of previous syllabus along with propose syllabus- **yes**
  8. University terms- **Annual**
  9. Subject wise detail syllabus – **As per attached sheets**
  10. Recommended books- **Mentioned in Syllabus**

Qualification of teacher- **M.A./M.Sc (Geography), as per UGC and University norms**

## **Structure /Pattern of Syllabus- S.Y.B.A**

- 1. Title of the course – Gg- 210- Geography of Disaster Management (G-2)**
2. Preamble of the syllabus
  - i. To introduce students the concept of disaster & its relation with Geography.
  - ii. To acquaint the students with the utility & application of hazards in different areas & its management.
  - iii. To make the students aware of the need of protection & disaster management.
- 3. Introduction: Pattern –Annual (20 marks internal; 80 marks University )**
4. Eligibility- **F.Y.B.A. pass**
5. Examination-
  - A. Pattern of examination-
    - i Internal term end and University exam,**
    - ii. Pattern of question paper- 20 : 80**

**Internal Exam- 60 Marks** = (converted to 20 marks)

**University Exam- 80 Marks** =

- B. Standard of passing- Internal -08, University -32= Annual marks 40**
- C. ATKT rules- Yes**
- D. Award of class- S.Y.B.A. Pass**
- E. External students- S.Y.B.A. Pass**
- F. Setting of question papers / pattern of question paper:

**Internal Exam- 60 Marks** = (converted to 20 marks)

- Question 1. Answers in 20 words- 14 marks (any 7 out of 10)
- Question 2. Answers in 50 words -08 marks (any 2 out of 4)
- Question 3. Answers in 150 words- 18 marks (any 3 out of 5)
- Question 4. Answers in 300 words- 20 marks (any 1 out of 2)

**University Exam- 80 Marks** =

- Question 1. Answers in 20 words- 20 marks (any 10 out of 15)
- Question 2. Answers in 50 words -10 marks (any 2 out of 4)
- Question 3. Answers in 150 words- 20 marks (any 2 out of 4)
- Question 4. Answers in 300 words- 30 marks (any 2 out of 4)

- G. Verification / Revaluation- Yes**

6. Structure of the Course
  - a. Compulsory paper- **S.Y.B.A. General**
  - b. Optional paper- **Yes**
  - c. Question paper and papers etc - **One**
  - d. Medium of instructions- **Marathi and English**
7. Equivalence of previous syllabus along with proposed syllabus- **Yes**
8. University terms- **Annual**
9. Subject wise detail syllabus – **As per attached sheets**
10. Recommended books- **Mentioned in Syllabus**

Qualification of teacher- **M.A./M.Sc (Geography), as per UGC and University norms**

## Structure /Pattern of Syllabus- S.Y.B.A

1. Title of the course – **Gg- 220- Economic Geography (S-1)**
2. Preamble of the syllabus
  - i. To introduce the students to the basic principles and concepts in Economic Geography
  - ii. To acquaint the students with the applications of Economic Geography in different areas and development.
  - iii. The main aim is to integrate the various factors of economic development and to acquaint the students about this dynamic aspect of economic geography
3. Introduction: Pattern –**Annual (20 marks internal, 80 Marks University)**
4. Eligibility- **F.Y.B.A. pass**
5. Examination-

A. Pattern of examination-

**i Internal term end and University exam,**

**ii. Pattern of question paper- 20 : 80**

**Internal Exam- 60 Marks = (converted to 20 marks)**

**University Exam- 80 Marks =**

**B. Standard of passing- Internal -08, University -32= Annual marks 40**

**C. ATKT rules- Yes**

**D. Award of class- S.Y.B.A. Pass**

**E. External students- S.Y.B.A. Pass**

F. Setting of question papers / pattern of question paper:

**Internal Exam- 60 Marks = (converted to 20 marks)**

Question 1. Answers in 20 words- 14 marks (any 7 out of 10)

Question 2. Answers in 50 words -08 marks (any 2 out of 4)

Question 3. Answers in 150 words- 18 marks (any 3 out of 5)

Question 4. Answers in 300 words- 20 marks (any 1 out of 2)

**University Exam- 80 Marks =**

Question 1. Answers in 20 words- 20 marks (any 10 out of 15)

Question 2. Answers in 50 words -10 marks (any 2 out of 4)

Question 3. Answers in 150 words- 20 marks (any 2 out of 4)

Question 4. Answers in 300 words- 30 marks (any 2 out of 4)

**G. Verification / Revaluation- Yes**

6. Structure of the Course

**a. Compulsory paper- S.Y.B.A. General**

**b. Optional paper- Yes**



c. Question paper and papers etc - **One**

d. Medium of instructions- **Marathi and English**

7. Equivalence of previous syllabus along with propose syllabus- **yes**

8. University terms- **Annual**

9. Subject wise detail syllabus – **As per attached sheets**

10. Recommended books- **Mentioned in Syllabus**

Qualification of teacher- **M.A./M.Sc (Geography), as per UGC and University norms**

# Structure /Pattern of Syllabus- S.Y.B.A

Title of the course – **Gg- 201- FUNDAMENTALS OF GEOGRAPHICAL ANALYSIS ( S-2)**

11. Preamble of the syllabus

- i To enable the students to use various Projections and Cartographic Techniques.
- ii To acquaint the students with basic of Statistical data.
- iii To acquaint the students with the principles of surveying, its importance and utility in the geographical study.

**12. Introduction: Pattern –Annual (100 marks University )**

**13. Eligibility- F.Y.B.A. pass**

14. Examination-

H. Pattern of examination-

**University Exam- 100 Marks =**

**I. Standard of passing- University - Annual marks 40**

**J. ATKT rules- Yes**

**K. Award of class- S.Y.B.A. Pass**

**L. External students-No**

M. Setting of question papers / pattern of question paper

**University Exam- 100 Marks =** As per scheme of marking

**N. Verification / Revaluation- No**

15. Structure of the Course

e. Compulsory paper- **S.Y.B.A.**

f. Optional paper- **No**

g. Question paper and papers etc – **As per batch**

**h. Medium of instructions- Marathi and English**

**16. Equivalence of previous syllabus along with propose syllabus- yes**

**17. University terms- Annual**

**18. Subject wise detail syllabus – As per attached sheets**

19. Recommended books- **Mentioned in Syllabus**

Qualification of teacher- **M.A./M.Sc( Geography), as per UGC and University norms**

# **Structure /Pattern of Syllabus- S.Y.B.A.**

**(From June 2014)**

- 1. Title of the Course – Gg- 220- Tourism Geography (S-1)**
2. Preamble of the Syllabus
  - i. To acquaint the student's basic concepts of Geography & Tourism.
  - ii. To aware the students with the utility and application of Tourism.
  - iii. To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
  - iv. To understand the impact of tourism on Physical and Human Environments.
- 3. Introduction: Pattern –Annual (20 marks internal; 80 marks University )**
4. Eligibility- **F.Y.B.A. pass**
5. Examination-
  - A. Pattern of examination-
    - i (Internal term end and University exam),**
    - ii. Pattern of question paper- 20 : 80**

**Internal Exam- 60 Marks = (converted to 20 marks)**

**University Exam- 80 Marks =**

- B. Standard of passing- Internal -08, University -32 = Annual marks 40**
- C. ATKT rules- Yes**
- D. Award of class- S.Y.B.A. Pass**
- E. External students- S.Y.B.A. Pass**
- F. Setting of question papers / pattern of question paper

**Internal Exam- 60 Marks = (converted to 20 marks)**

- Question 1. Answers in 20 words- 14 marks (any 7 out of 10)
- Question 2. Answers in 50 words -08 marks (any 2 out of 4)
- Question 3. Answers in 150 words- 18 marks (any 3 out of 5)
- Question 4. Answers in 300 words- 20 marks (any 1 out of 2)

**University Exam- 80 Marks =**

- Question 1. Answers in 20 words- 20 marks (any 10 out of 15)
- Question 2. Answers in 50 words -10 marks (any 2 out of 4)
- Question 3. Answers in 150 words- 20 marks (any 2 out of 4)
- Question 4. Answers in 300 words- 30 marks (any 2 out of 4)

**G. Verification / Revaluation- Yes**

6. Structure of the Course

a. Compulsory paper- **S.Y.B.A. General**

b. Optional paper- **Yes**

c. Question paper and papers etc - **One**

d. Medium of instructions- **Marathi and English**

7. Equivalence of previous syllabus along with proposed syllabus- **No**

8. University terms- **Annual**

9. Subject-wise detail syllabus – **As per attached sheets**

10. Recommended books- **Mentioned in Syllabus**

Qualification of teacher- **M.A./ M.Sc (Geography), as per UGC and University norms**

## **Structure /Pattern of Syllabus- S.Y.B.A**

Title of the course – **Gg- 201- FUNDAMENTALS OF GEOGRAPHICAL ANALYSIS ( S-2)**

Preamble of the syllabus

- i To enable the students to use various Projections and Cartographic Techniques.
- ii To acquaint the students with basic of Statistical data and diagrams.
- iii To acquaint the students with the principles of surveying, its importance and utility in the geographical study.

- 1. Introduction: Pattern –Annual (100 marks University )**
- 2. Eligibility- F.Y.B.A. pass**
- 3. Examination-**
  - A. Pattern of examination-  
University Exam- 100 Marks**
  - B. Standard of passing- University - Annual marks 40**
  - C. ATKT rules- Yes**
  - D. Award of class- S.Y.B.A. Pass**
  - E. External students- No**
  - F. Setting of question papers / pattern of question paper-  
University Exam- 100 Marks = As per scheme of marking**
  - G. Verification / Revaluation- No**
- 4. Structure of the Course**
  - a. Compulsory paper- S.Y.B.A.**
  - b. Optional paper- No**
  - c. Question paper and papers etc – As per batch**
  - d. Medium of instructions- Marathi and English**
- 5. Equivalence of previous syllabus along with proposed syllabus- Yes**
- 6. University terms- Annual**
- 7. Subject wise detail syllabus – As per attached sheets**
- 8. Recommended books- Mentioned in Syllabus**

Qualification of teacher- **M.A./M.Sc (Geography), as per UGC and University norms**

## Gg 210: Elements of Climatology and Oceanography (G2)

### Objectives:

1. To introduce the students to the basic principles and concepts in Climatology and Oceanography.
2. To acquaint the students with the applications of Climatology and Oceanography in different areas and environment.
3. To make the students aware of the Planet Earth and thereby to enrich the student's knowledge.

<b>Section I - Climatology</b>			
No.	Unit	Sub Units	Periods
1	Introduction to Climatology and Atmosphere	1. Definition, nature and scope 2. Importance of Climatology in modern times. 3. Weather and climate, elements of weather and climate 4. Composition and structure of the atmosphere	10
2	Insolation	1. Heat budget of the Earth. 2. Factors affecting horizontal distribution of temperature. 3. Inversion of temperature, lapse rate and its types. 4. Global warming.	8
3	Atmospheric Pressure and Wind System	1. Vertical and horizontal distribution of pressure. 2. Formation of pressure belts and their relation with winds. 3. Concept of pressure gradient. 4. Type of winds- planetary winds, periodic winds (Monsoon winds), local winds - land and sea breezes, mountain and valley winds. 5. El Niño and La Niña	10
4	Atmospheric Moisture and Precipitation	1. Sources of moisture, methods to express humidity of the air- absolute and relative humidity. 2. Forms of precipitation- rain, snow, dew, hail and fog. 3. Types of clouds- high, medium low clouds.	10
5	Atmospheric Disturbances	1. Cyclones- tropical and temperate and associated weather conditions. 2. Anticyclones and associated weather conditions.	7

<b>Section II – Oceanography</b>			
6	Oceanography	1. Definition, nature and scope. 2. Relevance of Oceanography on earth	8
7	Submarine Relief	1. General idea of ocean relief. 2. Relief of Atlantic, Pacific and Indian oceans.	8
8	Properties of Ocean Water	1. Properties of ocean water- temperature, density. 2. Salinity- meaning and causes. 3. Salinity of oceans, seas, and lakes with examples.	10
9	Movements of Ocean Water	1. Waves- Characteristics of sea waves, tsunamis. 2. Ocean currents- meaning, causes, types. 3. Ocean currents of Atlantic, Pacific and Indian Oceans 4. Effects of ocean currents. 5. Tides- meaning, causes, types. 6. Equilibrium theory of tides.	12
10	Coastal Environment	1. Significance of Coastal Environment. 2. Oceans as Storehouse of Resources for the future	7

### **Reference Books:**

- Critchfield, H.J., 1997. General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
- Dasgupta, A. and Kapoor, A.N., Principles of Physical Geography.
- Grald, S., General Oceanography.
- Ttrewartha, G., Introduction to Weather and Climate.
- King, C.A.M., Oceanography for Geographers.
- Lake, P., Physical Geography.
- Lutgens, F.K. and Tarbuck, E.J., 2007. The Atmosphere, Pearson Prentice Hall,
- Pirie, R.G., Oceanography (Contemporary).
- Ross, D.A., 1988. Introduction to Oceanography. Prentice Hall, New Jersey.
- Sharma, R.C. and Vatel. M.,- Oceanography for Geographers.
- Strahler, A.A. and Strahler, A. N., 2002. Physical Geography: Science and Systems of the Human Environment, John Wiley and Sons, INC.
- Strahler, A.H. and Strahler, A. N., 1992. Modern Physical Geography, John Wiley and Sons, Inc.
- Strahler, A.N., 1965. Introduction to Physical Geography, John Wiley and Sons, INC.
- Ahirrao, W.R., Alizad, S.S. and Dhapte, C.S., 1998. Climatology and Oceanography, Nirali Prakashan, Pune.
- Bhagvat Arvind and Karlekar Shrikant : Prakrutik Bhuvvidnyan
- Datye and Datye : Sugam Prakrutik Bhuvvidyan.

Various websites of internet.

## Gg-210 Geography of Disaster Management (G2)

### Objectives:-

- 1) To introduce students the concept of disaster & its relation with Geography.
- 2) To acquaint the students with the utility & application of hazards in different areas & its management.
- 3) To make the students aware of the need of protection & disaster management.

### SECTION - I

Sr. No.	Topic	Sub Topic	Learning Points	Periods
1	Introduction to hazards, disasters	Definition and types	a) Meaning, definition, b) Geographical conditions and disasters c) Classification of disasters	10
2	Basic concepts in disaster management.	Terminology and concepts	a) Concept of management b) Aims and objectives c) Pre-disaster management d) Post – disaster management	12
3.	Disaster management and measures	Structural and Non -structural measures	a) Structure of disaster management -Preparedness, Response, Recovery, Mitigation, Rehabilitation b) Standard operating procedure of management on government level c) Role of media	13
4	Climatic disasters and their management	causes, effects, area and management	a) Cyclones as disasters b) Droughts as disasters c) Floods as disasters	10

### SECTION – II

Sr. No.	Topic	Sub Topic	Learning Points	Periods
5	Geological and Geomorphic disasters and their management	Causes, effects, area and management	a) Earthquakes as disasters b) Landslides as disasters c) Tsunami as disasters	10
6	Anthropogenic disasters and their management	Trend, types, area, causes, effects and remedies.	a) Deforestation b) Forest fire as disasters c) Soil degradation d) Over exploitation of resources	12
7	Global issues and movements	Causes, effects and measures to conservation.	a) Global warming b) Ozone depletion c) Acid rain	10
8	Case Studies of disaster Managements	Management of Indian and Global disasters	a) Tsunami in Indian ocean -2004 b) Kedarnath Cloud Burst -2013 c) Fukushima Nuclear disaster -2011 d) Hail storm in Maharashtra- 2014	13



## Reference books:

1. Alexander David, 2000, Introduction in Confronting Catastrophe, Oxford University Press.
2. Alexander, D. (1993): Natural Disasters. UCL Press Ltd., London
3. Andharia J. 2008, Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no. 8.
4. Blakie, P. Cannon T, Davis I, Wisner B. 1997, At Risk Natural Hazards, People Vulnerability and Disasters Rourledge.
5. Bloom, A.L., 1998. Geomorphology. A Systematic Analysis of Late Cenozoic Landforms. Pearson Education (Singapore) Pte. Ltd.
6. Chandna, R. C., 2000. A Geography of Population, Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
7. Copola P Damon, 2007, Introduction to International Disaster Management
8. Cuny, F. 1983, Development and Disaster, Oxford University Press.
9. Govt. of India, 2005, Disaster Management Act Government of India, New Delhi.
10. Hamblin, W.K., 1989. The Earth's Dynamic Systems, Macmillan Publishing Company, New York.
11. Huggett, D.A., 2004. Fundamentals of Biogeography, Routledge.
12. Kale, V.S. and Gupta, A., 2001. Introduction to Geomorphology, Orient Longman, Calcutta.
13. Knox, P. and Agnew J., 1998. The Geography of the World Economy, Arnold, London.
14. Lutgens, F.K. and Tarbuck, E.J., 2007. The Atmosphere. Prentice Hall, Englewood Cliffs, New Jersey, USA.
15. Ross, D. A., 1988. Introduction to Oceanography. Prentice Hall, New Jersey.
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## Gg 220: Economic Geography (S-1)

### Objectives:

1. To introduce the students to the basic principles and concepts in Economic Geography
2. To acquaint the students with the applications of Economic Geography in different areas and development.
3. The main aim is to integrate the various factors of economic development and to acquaint the students about this dynamic aspect of economic geography.

<b>Section I</b>			
No.	Unit	Learning Points	Periods
1	Introduction to Economic Geography	1.Introduction, Definition and meaning 2.Nature and Scope 3. Recent trends of economic geography 4. Approaches to study of economic geography	10
2	Economic Activities	1.Sectors of Economy- Primary, Secondary and Tertiary with examples 2. Concept of More Developed, Developing and Less Developed countries. 3. Impact of economic activities on environment.	10
3	Natural Resources	1.Introduction, Meaning 2. Importance of Natural Resources 3. Classification of Natural Resources- Renewable and Non-renewable 4. Conservation of Resources	11
4	Minerals and Energy Resources	1.Classification of Minerals 2. Ferrous and Non-ferrous and their world distribution- Iron Ore, Manganese, Copper, Mica. 3. Energy Resources - (a) Conventional - Coal, Petroleum, Hydel and Atomic (b) Non-Conventional- Solar, Wind, Tidal, Energy from Solid Waste 4. Energy Crisis in India	14
<b>Section-II</b>			
5	Industries	1.Factors affecting on Industrial Location 2.Weber's Theory of Industrial Location 3.Major Industries- a) Iron and Steel Industries	12

		<ul style="list-style-type: none"> <li>b) Cotton Textile Industries</li> <li>c) Automobile Industries</li> <li>d) Ship Building Industries</li> <li>e) Paper Industries</li> </ul>	
6	Agriculture	<ul style="list-style-type: none"> <li>1.Importance of Agriculture</li> <li>2.Factors influencing agriculture- physical, economic, social, cultural</li> <li>3. Spatial Distribution of major food and cash crops- Wheat, Rice, Maize, Rubber</li> <li>4. Agricultural Classification- <ul style="list-style-type: none"> <li>a) Subsistence Agriculture</li> <li>b) Commercial Grain Farming</li> <li>c) Plantation Agriculture</li> <li>d) Market Oriented Farming</li> </ul> </li> <li>5.Role of Agriculture in Indian Economy</li> </ul>	12
7	Transport and Trade	<ul style="list-style-type: none"> <li>1.Geographical factors influencing Development of Transportation.</li> <li>2. World Distribution of Roads, railways, waterways, airways and pipelines.</li> <li>3. Factors Influencing on International Trade.</li> <li>4. Ricardo's Classical Theory</li> <li>5. World Trade Organisation (WTO), OPEC</li> </ul>	12
8	Economic Development in India	<ul style="list-style-type: none"> <li>1.Economic Development in Pre and Post-independence period.</li> <li>2. Impact of Green Revolution</li> <li>3.Privatization, Globalisation and Liberalisation.</li> </ul>	9

**References:-**

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Janaki V.A. (1985): Economic Geogrphahy, Concept Publishing Co.

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Singh Jasbir, Dillon S.S. (2004): Agriculture Geography, Tata McGraw Hill

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## Gg- 220 : Tourism Geography (S-1)

### Objective:-

- 1) To acquaint the student's basic concepts of Geography & Tourism
- 2) To aware the students with the utility and application of Tourism
- 3) To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
- 4) To understand the impact of tourism on Physical and Human Environments.

<b>Section-I</b>				
No.	Unit	Sub-unit	Learning Points	Periods
1	Introduction to Tourism Geography	(A) Introduction and Definition  (B) Nature of Tourism Geography  (C) Scope of Tourism Geography  (D) Importance	1.Introduction 2.Definition of Tourists and Tourism  1.Uniqueness    2. Diversity 3.Recreational    4. Dynamic 5.Interdisciplinary 6.Non-Productive 7.Seasonal  1 Tourism as a Basic Need of Mankind 2 Tourism and Transportation 3 Natural environment and Tourism 4. Culture and Tourism 5. Religion and Tourism 6. Tourism Products  1 Relation Between Geography and Tourism 2 Importance of Tourism	10
2	Concepts and Classification of Tourism	(A) Concepts  (B) Classification Based on a) Nationality  b) Travel Time  c) Travel Distance	1 Geo-Tourism 2 Agro- Tourism 3 Heritage Tourism 4 Adventure Tourism 5 Religious Tourism 6 Health Tourism 7 Sport Tourism 8 Disaster Tourism  1. International    2. National 3. Regional    4. Local  1. Long Haul    2. Short Haul.  1. Global    2. National 3. Regional    4. Local	15

		d) Number Of Tourists	1. Groups      2. Family Members 3. Individual	
		e) Purpose	1. Religious      2. Recreation 3. Heritage      4. Adventure 5. Nature      6. Health 7. Sports	
		f) Approach	1. Eco-tourism as an Approach	
3	Assessing Tourism Potentials -I	Physical Factors (A) Relief	1. Mountain      2. Plateau 3. Plain      4. Sea Beaches 5. River Source   6. Water Fall	10
		(B) Water bodies	1. Lakes/ Dams    2. Hot Spring 3. Natural gassers 4. River –Confluences	
		(C) Climatic	1. Hill Station    2. Snow Fall 3. Rainy Season   4. Sanatoriums	
		(D) Forest	1. National Park   2. Sanctuaries (With Indian Examples )	
4	Assessing Tourism Potentials -II	Socio- Cultural Factors (A) Religious (B) Historical (C) Socio-Cultural	Pilgrim – All Religious Centers Historical Monuments Culture, Festivals, Sports Centres, Warli Paintings, Ideal Village (With Indian Examples)	10
<b>Section -II</b>				
5	Transportation and Communication	Infrastructure and Support System	1. Road      2. Rail      3. Water 4. Air      5. Space  1. Guide 2. Telephone/ mobile/ TV 3. Internet 4. Electronic & Printing Media 5. Travel & Tourist Agencies	10
6	Accommodation	Accommodation Types	1 Private Hotels, motels, Inn 2 Govt. accommodation- Tourist home, Guest House, Rest house, Youth Hostel, Tents, Caravans and Bed & Breakfast 3. Rail Yatribhavan 4. House boats 5. Dharmashala	10

7	Impact of Tourism	(A) Environmental Impact  (B) Economic Impacts  (C) Social and Cultural Impact	1.Land Degradation 2.Pollution – Land, Water, Air 3. Loss of Plants 4. Loss of Wild Animals and Birds  1. Tourism as an Economic Activity 2. Effect on foreign Exchange 3. Employment generation 4. Increase of Land Values 5. Increase of Trading Activity 6. Increase of Govt. Revenues 7. Growth of infrastructure development 8.Multiple effect  1.New colonialism 2. Crime 3.Religion 4. Language 5. Health 6. Traditional Arts	12
8.	Case Studies of Major Tourist Centers in India	(A). Hill Station (B) Beach Point (C). Historical (D) Religious (E) Dams/ Lake	1.Manali 2.Mahabaleshwar 1. Marina Beach (Chennai) 2.Diveagar (Raigadh) 1 Konark Sun Temple (Orissa) 2. Raigadh Fort 1. Vaishno Devi (Jammu) 2. Shegaon (Buldhana) 1. Sardar Sarovar (Gujrat) 2. Lonar Lake (Buldhana)	13

### References:-

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- 13..Shinde S.B, Phadke Prakashana Kolhapur 2: Geography of Tourism
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21. Suryawanshi Rajendra (2012): Assessment of Potentials for Eco-tourism, Lambert Publication.



## Gg-201 : FUNDAMENTALS OF GEOGRAPHICAL ANALYSIS

From June 2014

Workload : Six periods per week per batch (12 Students Per Batch)  
(Examination for the Course will be conducted at the end of academic year)

### Objectives:

1. To enable the students to use various Projections and Cartographic Techniques.
2. To acquaint the students with basic of Statistical data.
3. To acquaint the students with the principles of surveying, its importance and utility in the geographical study.

### SECTION- I

No	Topic	Learning Points	Exercises	No. of periods
1	Maps and Scales	1. Maps : Meaning, definition and Types 2. Map Scale : Definition and Types	1. Map : Meaning, Definition and Types. 2. Map Scale : Definition and Types  Conversion of Verbal scale to numeric and vice-versa (in British and Metric Systems) i) Construction of simple graphical scale (Two examples) i) Construction of comparative scale (Two examples)	15
2	Map Projection	1. Definition and need of Map Projection 2. Classification of map projection based on method of construction and developable surfaces used.	1. Zenithal Polar projection. i. Zenithal Polar Gnomonic Projection ii. Zenithal Polar Stereographic Projection. 2. Conical Projection : i. Projection with one standard parallel ii. Bonne's Projection 3. Cylindrical Projection i. Cylindrical equal area Projection. ii. Mercator's Projection 4. Conventional Map Projections i. Mollweide's Projection (Construction of above map projection with properties and uses of each group : one example from each hemisphere).	20
3	Data Representation by various techniques	1. Graphs and Diagrams	1. Simple Line Graph 2. Polygraph 3. Simple Bar Diagram 4. Compound Bar Diagram 5. Pie Diagram (Chart) 6. Choropleth Mapping Plotting & Presentation using computers	15

4	Basic analysis of Statistical Data	1. Population and Sample 2. Statistical Data and Frequency	1. Population, sample, Method of sampling, Characteristics of sample 2. Tally marks and frequency table. 3. Frequency distribution (histogram and polygon) 4. Cumulative Frequency and Ogive curve.	10
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**SECTION II**

5	Surveying	1. Directions 2. Definition of Surveying 3. Types of Surveying 4. Measurement of Land	1. Various Methods of deciding North direction True, Magnetic and Grid North  2. Plane Table Survey. i. Radiation Method      ii. Intersection methods 3. Prismatic Compass Surveying Methods: ii. Open Travers          ii. Close Travers  4. GPS Survey & Plotting Finding Latitude (X), Longitude (Y) and Altitude (Z). Plotting of X and Y on graph paper 5. Dumpy Level Survey Plotting by- i. Rise and Fall Method ii. Collimation Plane Method  6. At least exercise involving of actual measurement of piece of a land.	40
6	Field Excursion / Village/ Urban Survey	Visit two places of geographical interest anywhere in the country.	One short tour of two days duration and Preparation of tour report. OR One long tour more than five days and preparation of tour report	20

- Note :**
1. Use of stencils, log tables, computer and calculator is allowed.
  2. Journal should be completed and duly certified by practical in-charge and Head of the Department.
  3. Int. and Ext examiner should set jointly the question paper for each batch

**Reference Books :**

1. Singh Leharaj, (1973) : Map Work and Practical Geography, Central Book Depot – Allahabad
2. D. Y. Ahirrao and E. K. Karanjkehele, (2002) : Pratyakshik Bhugol, Sudarshan – Nashik
3. P. G. Saptarshi and S. R. Jog, Statistical Methods
4. S. N. Karlekar, (2008) : Statistical Methods, Diamond – Pune
5. T. P. Kanetkar and S. V. Kulkarni, (1986) : Surveying and Leveling, Pune Vidyarthi Griha Prakashan – Pune
6. Arjun Kumbhare, Practical Geography
7. Pijushkanti Saha & Partha Basu. (2007), 'Advanced Practical Geography', Books and Allied (P) Ltd, Kolkata



पुणे विद्यापीठ

मराठी

द्वितीय वर्ष कला (S. Y.B.A.)

सन २०१४-१५ पासूनचा पुनर्रचित अभ्यासक्रम

## S.Y.B.A.(G 2)

### द्वितीय वर्ष कला (सामान्य स्तर २)

#### आधुनिक मराठी साहित्य आणि उपयोजित मराठी

उद्दिष्टे :

- १ शुद्धलेखनाची ओळख करून देणे.
- २ पारिभाषिक संज्ञांची ओळख करून देणे.
- ३ चरित्र-आत्मचरित्र या साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान करून देणे.
- ४ आधुनिक मराठी साहित्यातील निवडक चरित्र-आत्मचरित्रात्मक वेच्यांचे आकलन, आस्वाद आणि मूल्यमापन करण्याची क्षमता विद्यार्थ्यांमध्ये निर्माण करणे.

### प्रथम सत्र

एकूण तास: ४८

गुण: ६०

#### १. उपयोजित मराठी

तास : १२

गुण १५

- |   |                               |    |
|---|-------------------------------|----|
| १ | अर्जलेखन                      | ५  |
| २ | अशुद्ध शब्द शुद्ध करून लिहिणे | १० |

#### २. 'चरित्र' या साहित्यप्रकाराची तात्त्विक मीमांसा

तास : १२

गुण १५

- १ चरित्र : संकल्पना
- २ चरित्र : साहित्यप्रकाराचे स्वरूप
- ३ चरित्र : साहित्यप्रकाराची वाटचाल

### ३. पाठ्यपुस्तक

तास : २४

गुण ३०

### जीवनवेध

संपादक : प्रा. डॉ. स्नेहल तावरे

प्रा. डॉ. शिरीष लांडगे

### द्वितीय सत्र

एकूणतास: ४८

गुण : ६०

#### १) व्यावहारिक मराठी

तास : १२

गुण १५

१ सारांश लेखन

५

२ पारिभाषिक संज्ञा

१०

#### २) 'आत्मचरित्र' या साहित्यप्रकाराची तात्त्विक मीमांसा

तास : १२

गुण १५

१ आत्मचरित्र : संकल्पना

२ आत्मचरित्र व आत्मकथन : साम्य-भेद

३ आत्मचरित्र : साहित्यप्रकाराची वाटचाल

#### ३) पाठ्यपुस्तक

तास : २४

गुण ३०

### माझी जडणघडण

संपादक : प्रा. डॉ. स्नेहल तावरे

प्राचार्य डॉ. उज्ज्वला देवरे

## संदर्भ ग्रंथ

- १ चरित्र आत्मचरित्र (तंत्र आणि इतिहास) प्रा. अ. म. जोशी
- २ मराठी चरित्र मूलतत्त्वे व समीक्षा ग.का.रावते
- ३ चरित्रचिंतन द. न. गोखले
- ४ आत्मचरित्र मीमांसा डॉ.आनंद यादव
- ५ चरित्र आणि आत्मचरित्र- (साहित्यरूप) सदा कऱ्हाडे
- ६ मराठीतील आत्मचरित्रपर लेखन उषा हस्तक
- ७ वाङ्.मयीन संज्ञाकोश प्रभा गणोरकर व इतर (संपादक)
- ८ मराठी वाङ्.मयकोश खंड -४ विजया राजाध्यक्ष (संपादक)
- ९ चरित्रात्मक नाटक : संकल्पना आणि समीक्षा डॉ. गीता मांजरेकर
- १० ललित, चरित्र/ आत्मचरित्रे विशेषांक - जून - जुलै २०१३
- ११ स्वातंत्र्यपूर्व राजकीय नेत्यांच्या आत्मचरित्रांचा अभ्यास : एक चिकित्सा डॉ.संजय घोडेकर
- १२ स्वातंत्र्योत्तर राजकीय नेत्यांच्या आत्मचरित्रांचा अभ्यास : एक चिकित्सा डॉ.संजय घोडेकर

## प्रश्नपत्रिकेचे स्वरूप व गुण विभागणी आराखडा

### प्रथम सत्र परीक्षा

वेळ : ३ तास

गुण ६०

प्रश्न १ ला. खालील प्रश्नांची उत्तरे लिहा.

गुण १५

१. दोनपैकी **एका** विषयावर अर्ज लेखन करणे. ०५
२. दिलेल्या परिच्छेदातील अशुद्ध शब्द शुद्ध करून पुन्हा परिच्छेद लिहिणे.  
(किमान १०० शब्दांच्या परिच्छेदात फक्त **वीस** अशुद्ध शब्द देणे) १०

प्रश्न २रा. वीस शब्दांपर्यंत उत्तरे लिहा.

गुण २०

१. चरित्राच्या तात्त्विक मीमांसेवरील सात प्रश्नांपैकी **पाच** प्रश्न सोडविणे.
२. 'जीवनवेध' या संपादित पाठ्यपुस्तकावरील सात प्रश्नांपैकी **पाच** प्रश्न सोडविणे.

प्रश्न ३रा. पन्नास शब्दांपर्यंत उत्तरे लिहा

गुण १०

१. आत्मचरित्राच्या तात्त्विक मीमांसेवरील दोन प्रश्नांपैकी **एक** प्रश्न सोडविणे.
२. 'जीवनवेध' या संपादित पाठ्यपुस्तकावरील चार प्रश्नांपैकी **दोन** प्रश्न सोडविणे.

प्रश्न ४था. दीडशे शब्दांत उत्तरे लिहा.

गुण १५

१. 'जीवनवेध' या संपादित पाठ्यपुस्तकावरील चार प्रश्नांपैकी **दोन** प्रश्न सोडविणे.

## वार्षिक परीक्षा

वेळ : ३ तास

गुण ८०

प्रश्न १ ला: खालील प्रश्नांची उत्तरे लिहा.

गुण १५

१. वर्तमानपत्रासाठी जाहिरात लेखन (८)
२. पारिभाषिक संज्ञा (१४ इंग्लिश संज्ञांपैकी ७ सोडविणे.) (७)

प्रश्न २रा. वीस शब्दांपर्यंत उत्तरे लिहा.

गुण १०

१. 'माझी जडणघडण' या पाठ्यपुस्तकावरील सात प्रश्नांपैकी पाच प्रश्न सोडविणे.

प्रश्न ३रा. पन्नास शब्दांपर्यंत उत्तरे लिहा.

गुण १५

१. आत्मचरित्राच्या तात्त्विक मीमांसेवरील पाच प्रश्नांपैकी तीन प्रश्न सोडविणे.

प्रश्न ४था. दीडशे शब्दांपर्यंत उत्तरे लिहा

गुण १६

१. 'जीवनवेध' या पाठ्यपुस्तकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
२. 'माझी जडणघडण' या पाठ्यपुस्तकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

प्रश्न ५वा. तीनशे शब्दांपर्यंत उत्तरे लिहा.

गुण २४

१. 'जीवनवेध' या पाठ्यपुस्तकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
२. 'माझी जडणघडण' या पाठ्यपुस्तकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.



## S. Y. B. A. (G 2)

### द्वितीय वर्ष कला (सामान्य स्तर २)

#### पर्यायी अभ्यासक्रम

#### व्यावहारिक व उपयोजित मराठी

उद्दिष्टे :

- १ संज्ञापनातील भाषेच्या भूमिकेचे, विविध आविष्कारांचे ज्ञान करून देणे.
- २ भाषिक कौशल्यांचे विविध आविष्कार आणि प्रसारमाध्यमे यांच्या परस्परसंबंधाचे ज्ञान करून देणे.
- ३ भाषिक कौशल्ये व क्षमता विकसित करणे.
- ४ मराठीच्या कार्यालयीन व व्यावसायिक कामकाजात होणाऱ्या वापराची माहिती करून घेणे.
- ५ कार्यालयीन व व्यावसायिक भाषाव्यवहारासाठी आवश्यक लेखनकौशल्यांचे संपादन व उपयोजन करणे.

#### प्रथम सत्र

एकूण तास : ४८

गुण : ६०

#### १) कार्यालयीन मराठी भाषा

तास : १२

गुण १५

- १ कार्यालयीन भाषाव्यवहाराचे स्वरूप
- २ व्यवहारभाषा व कार्यालयीन भाषा : वेगळेपण.

#### २) पत्रव्यवहाराचे स्वरूप व वैशिष्ट्ये

तास : १२

गुण १५

- १ पत्रलेखनाचे प्रयोजन
- २ कार्यालयीन पत्रव्यवहार

### ३. अर्जलेखन- स्वरूप व वैशिष्ट्ये

तास : १२

गुण १५

- १ अर्जलेखनाचे प्रयोजन
- २ अर्जलेखनाचे प्रकार
- ३ अर्जलेखनाचा मसुदा (Format): प्रयोजन व स्वरूप
- ४ अर्जलेखन : प्रात्यक्षिक ( कार्यालयीन अर्जाचे विविध नमुने गोळा करणे,मसुदा तयार करणे )

### ४) इतिवृत्त- संकल्पना व स्वरूप

तास : १२

गुण १५

- १ इतिवृत्तलेखनाचे स्वरूप
- २ इतिवृत्तलेखनाचे प्रयोजन
- ३ इतिवृत्तलेखनाची पद्धती
- ४ इतिवृत्त लेखन : प्रात्यक्षिक (शासकीय व इतर कार्यालयांत वेगवेगळ्या कारणांनी व वेगवेगळ्या स्तरांवर लिहिली गेलेली इतिवृत्ते मिळवून अभ्यासणे. प्रत्यक्ष कार्यक्रमाचे इतिवृत्त लेखन )

## द्वितीय सत्र

एकूण तास : ४८

गुण : ६०

### १) कार्यालयीन टिप्पणी लेखन

तास : १२

गुण १५

- १ कार्यालयीन टिप्पणी लेखनाचे स्वरूप
- २ कार्यालयीन टिप्पणी लेखनाचे प्रयोजन
- ३ कार्यालयीन टिप्पणी लेखनाची पद्धती,

- ४ कार्यालयीन टिप्पणी : प्रात्यक्षिक (शासकीय व इतर कार्यालयांत वेगवेगळ्या कारणांनी व वेगवेगळ्या स्तरांवर लिहिल्या गेलेल्या टिप्पण्या मिळवून अभ्यासणे. प्रत्यक्ष कार्यालयीन टिप्पणी लेखन करणे.)

## २) पत्रकलेखन

तास : १२

गुण १५

- १ पत्रकलेखनाचे स्वरूप
- २ पत्रकलेखनाचे प्रयोजन
- ३ पत्रकलेखन : प्रकार ( निवेदनपत्रक, निविदा, सूचनापत्रक, माहितीपत्रक, घोषणापत्रक, प्रसिद्धीपत्रक, परिपत्रक. )
- ४ पत्रकलेखन : प्रकार व प्रात्यक्षिक (विविध कार्यालयीन पत्रक व्यवहारांचे नमुने गोळा करणे.)

## ३) संपादन : संकल्पना व स्वरूप

तास : १२

गुण १५

- १ संपादनाचे प्रयोजन व भूमिका
- २ संपादनाचे नियोजन व पूर्वतयारी
- ३ संपादन - स्मरणिका, गौरविका, संस्थापत्रिका, वार्षिक अहवाल, समीक्षाग्रंथ इ.
- ४ संपादन : प्रात्यक्षिक (विविध संपादनांचा संग्रह करून संपादकीय कौशल्याचे निरीक्षण करणे)

## ४) कार्यालयीन दफ्तर व्यवस्थापन : संकल्पना व स्वरूप

तास : १२

गुण १५

- १ कार्यालयीन कागदपत्रांचे स्वरूप
- २ कार्यालयीन कागदपत्रांचे वर्गीकरण

- ३ कार्यालयीन कागदपत्रे : धारिका (फाईल) व्यवस्थापन ( अनुक्रमणिका, विभागीय रचना, टॅग इ.)
- ४ धारिकांचे प्रकार व कागदपत्रांचे व्यवस्थापन.

### संदर्भ पुस्तके

१. व्यावहारिक मराठी पाठ्यपुस्तक -द्वितीय वर्ष वाणिज्य व द्वितीय वर्ष विज्ञान-पुणे विद्यापीठ प्रकाशन, पुणे.
२. व्यावहारिक मराठी- कल्याण काळे व द.दि.पुंडे, निराली प्रकाशन, पुणे.
३. व्यावहारिक मराठी- ल.रा.नसिराबादकर, फडके प्रकाशन, कोल्हापूर.
४. नवभारत- व्यावहारिक मराठी विशेषांक, ऑगस्ट-सप्टें, १९८२, प्राज्ञ पाठशाला, वाई.
५. उपयोजित अभ्यासक्रम, मराठी भाषेची संवादकौशल्ये-प्रकाशक: यशवंतराव महाराष्ट्र मुक्त विद्यापीठ, नाशिक.
६. शासनव्यवहारात मराठी (समस्या :स्वरूप: प्रक्रिया )- भाषा संचालनालय, महाराष्ट्र शासन, शासकीय फोटो झिंको मुद्रणालय, पुणे-१९९७
७. 'अभिलेख' व्यवस्थापनाची मार्गदर्शिका - संकलक व लेखक : डॉ.संजीव प.देसाई, संपा.भास्कर धाटावकर, पुराभिलेख विभाग, महाराष्ट्र शासन, शासकीय मुद्रणालय, मुंबई.
८. व्यावहारिक मराठी- प्रकाश परब, मिथुन प्रकाशन, प्रथमावृत्ती : जून १९८९, डॉंबिवली (पूर्व ).
९. व्यावहारिक मराठी - डॉ. स्नेहल तावरे
१०. व्यावहारिक मराठी - डॉ. गोविलकर , डॉ. पाटणकर
११. भाषिक सर्जन आणि उपयोजन - राजन गवस, अरुण शिंदे, गोमटेश्वर पाटील
११. व्यावहारिक मराठी - डॉ. मोकाशी, डॉ. नेमाडे
१२. व्यावहारिक आणि उपयोजित मराठी - डॉ. मनोहर रोकडे
१३. मराठी साहित्य : काही लेखनबंध - डॉ.सुधाकर शेलार

## प्रश्नपत्रिकेचे स्वरूप व गुण विभागणी आराखडा

### प्रथम सत्र परीक्षा

वेळ : ३ तास

गुण ६०

प्रश्न १ ला: वीस शब्दांपर्यंत उत्तरे लिहा.

२०

चौदा प्रश्नांपैकी दहा प्रश्न सोडविणे.

प्रश्न २ रा: पन्नास शब्दांपर्यंत उत्तरे लिहा.

१०

१. प्रकरण १ व प्रकरण २ वरील दोन पैकी एका प्रश्नाचे उत्तर सोडविणे.

२. प्रकरण ३ व प्रकरण ४ वरील दोन पैकी एका प्रश्नाचे उत्तर सोडविणे.

प्रश्न ३ रा: दीडशे शब्दांपर्यंत उत्तरे लिहा.

३०

१. प्रकरण १ व प्रकरण २ वरील चार पैकी दोन प्रश्नाचे उत्तर सोडविणे.

२. प्रकरण ३ व प्रकरण ४ वरील चार पैकी दोन प्रश्नाचे उत्तर सोडविणे.

## वार्षिक परीक्षा

वेळ : ३ तास

गुण ८०

प्रश्न १ ला: वीस शब्दांपर्यंत उत्तरे लिहा.

२०

द्वितीय सत्रातील प्रकरणांवर चौदा प्रश्नांपैकी दहा प्रश्न सोडविणे.

प्रश्न २ रा: पन्नास शब्दांपर्यंत उत्तरे लिहा.

१०

१ प्रथम सत्रातील दोन पैकी एका प्रश्नाचे उत्तरे सोडविणे.

२ द्वितीय सत्रातील दोन पैकी एका प्रश्नाचे उत्तरे सोडविणे.

प्रश्न ३ रा: दीडशे शब्दांपर्यंत उत्तरे लिहा.

२०

१. द्वितीय सत्रातील प्रकरण १ व प्रकरण २ वरील दोन पैकी एका प्रश्नाचे उत्तर सोडविणे.

२. द्वितीय सत्रातील प्रकरण १ व प्रकरण २ वरील दोन पैकी एका प्रश्नाचे उत्तर सोडविणे.

प्रश्न ४ था: तीनशे शब्दांपर्यंत उत्तरे लिहा.

३०

१ प्रथम सत्रातील दोन पैकी एका प्रश्नाचे उत्तरे सोडविणे.

२ द्वितीय सत्रातील दोन पैकी एका प्रश्नाचे उत्तरे सोडविणे.

**S. Y. B. A. (S 1)**

**द्वितीय वर्ष कला (विशेषस्तर १)**

**मराठी साहित्यातील विविध साहित्यप्रकार**

उद्दिष्टे :

- १ मराठी साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान देणे.
- २ वेगवेगळ्या कालखंडातील मराठीतील अभिजात साहित्यकृतींचा संस्कार घडविणे. साहित्याविषयीची अभिरुची निर्माण करणे.
- ३ साहित्यकृतीला मुक्त प्रतिसाद देण्याची क्षमता विकसित करणे.
- ४ साहित्यकृतीचे आकलन, आस्वाद आणि मूल्यमापन करण्याची दृष्टी निर्माण करणे.
- ५ साहित्याचा सूक्ष्म पातळीवर अभ्यास करण्याची क्षमता विकसित करणे.
- ६ पदव्युत्तर अभ्यास करण्याची पूर्वतयारी करणे.

**सत्र पहिले**

**नाटक**

एकूण तास: ४८

सत्रांत परीक्षा गुण: ६०

**१) तात्त्विक मीमांसा**

तास : १२

गुण १५

१ : नाटक या साहित्यप्रकाराची तात्त्विक मीमांसा

- १ नाटक साहित्यप्रकाराची संकल्पना
- २ नाटकाचे घटक
- ३ नाटकाचे प्रकार
- ४ नाटक या साहित्यप्रकाराची वाटचाल

**२) नाटक संहिता**

तास : ३६

गुण ४५

## नटसम्राट- वि.वा.शिरवाडकर

### संदर्भ ग्रंथ

- १ शोकनाट्याचे साहित्यरूप - डॉ. सदा कऱ्हाडे
- २ अँरिस्टाटलाचे काव्यशास्त्र - गो.वि. करंदीकर
- ३ मराठी रंगभूमी : घटना आणि परंपरा - डॉ. भालेराव स्मृतिग्रंथ
- ४ मराठी नाट्यतंत्र (संपा.) मो.द. ब्रह्मे
- ५ आजचे नाटककार (सं.)डॉ. द. दि.पुंडे/ डॉ. स्नेहल तावरे
- ६ नट नाटक व नाटककार - व.शां. देसाई
- ७ कुसुमाग्रज - शिरवाडकर एक शोध - डॉ. द. दि. पुंडे
- ८ मराठी शोकात्म नाटके - डॉ. उज्ज्वला जाधव
- ९ भारतीय रंगभूमीची परंपरा - डॉ. माया सरदेसाई
- १० मराठी शोकांतिका : नवविचार - डॉ. पुष्पलता राजापुणे - तापस
- ११ स्वातंत्र्योत्तर सामाजिक नाट्यसृष्टी - डॉ. श्रीकांत पाटील
- १२ भारतीय नाट्यप्रयोगविज्ञान - प्रा.अ. म. जोशी
- १३ Shakespearean Tragedy - A. C. Brally
- १४ Modern Tragedy - Raymond Williams
- १५ नटसम्राट : एक अभ्यास - प्रा.मो.द. ब्रह्मे
- १६ नटसम्राट : एक समीक्षा (संपा.) - गो. तु. पाटील
- १७ शिरवाडकरांची नाटके - डॉ. शोभा देशमुख
- १८ कुसुमाग्रज साहित्यदर्शन - डॉ. उषा देशमुख
- १९ स्वातंत्र्योत्तर सामाजिक नाट्यसृष्टी - डॉ. श्रीकांत पाटील
- २० मराठी नाटक : नव्या दिशा नवी वळणे - डॉ. तारा भवाळकर
- २१ भरतमुनींचे नाट्यशास्त्र - डॉ. सरोज देशपांडे



## द्वितीय सत्र

### कादंबरी

एकूण तास : ४८

सत्रांत परीक्षा गुण : ६०

#### १) तात्त्विक मीमांसा

तास : १२

गुण १५

#### १ : कादंबरी या साहित्यप्रकाराची तात्त्विक मीमांसा

- १ कादंबरी या साहित्यप्रकाराची संकल्पना
- २ कादंबरीचे घटक
- ३ कादंबरीचे प्रकार
- ४ कादंबरी या साहित्यप्रकाराची वाटचाल

#### २) कादंबरी संहिता

तास : ३६

गुण ४५

#### फकिरा -अण्णा भाऊ साठे

#### संदर्भ ग्रंथ

- १ अण्णा भाऊ साठे साहित्य समीक्षा - (संपा.) प्रा. रणधीर शिंदे
- २ अण्णा भाऊ साठे - बजरंग कोरडे
- ३ अण्णा भाऊ साठे समाजविचार आणि साहित्य विवेचन - डॉ. बाबुराव गुरव
- ४ लोकशाहीर अण्णा भाऊ साठे निवडक वाङ्मय - (संपा.) अर्जुन डांगळे
- ५ ग्रामीण दलित कादंबरी : तुलना (संपा.) डॉ. भास्कर शेळके
- ६ ग्रामीण दलित साहित्य : डॉ. मधुकर मोकाशी
- ७ दलित साहित्य : डॉ. नीला पांढरे
- ८ चरित्र आणि आत्मचरित्र वाङ्मयप्रकारांचे विवेचन - सदा कऱ्हाडे

- ९ युगांतर - दिवाळी अंक १९६९ अण्णाभाऊ साठे विशेषांक (संपा - श्रीकृष्ण पोवळे)
- १० समाज सुधारक लोकशाहीर अण्णाभाऊ साठे (संपा.) अॅड. महेंद्र शिंदे
- ११ फकिरा: एक आकलन - डॉ. वैशाली भालसिंग
- १२ मराठी प्रादेशिक कादंबरी - स्वरूप आणि विश्लेषण - डॉ. भास्कर शेळके
- १३ अण्णा भाऊ साठे समग्र वाङ्मय - आसाराम गायकवाड
- १४ परिवर्तनाचा जागर - डॉ. गिरीष मोरे
- १५ जननायक अण्णा भाऊ साठे- डॉ. शिवाजी जवळगेकर
- १६ दलित व दलितेतरांची कथा : एक अभ्यास - डॉ. श्रीराम गडकर

## प्रश्नपत्रिकेचे स्वरूप व गुण विभागणी आराखडा

### प्रथम सत्र परीक्षा

वेळ : ३ तास

गुण ६०

प्रश्न १ ला: पन्नास शब्दांपर्यंत उत्तरे लिहा.

१५

नाटक या साहित्यप्रकाराच्या तात्त्विक मीमांसेवर पाच प्रश्नांपैकी तीन प्रश्न सोडविणे.

प्रश्न २ रा : वीस शब्दांपर्यंत उत्तरे लिहा.

१०

‘नटसम्राट’ या नाटकावर दहा प्रश्न विचारणे पाच सोडविणे.

प्रश्न ३ रा. पन्नास शब्दांपर्यंत उत्तरे लिहा.

१५

‘नटसम्राट’ या नाटकावर सहा प्रश्न विचारणे तीन सोडविणे.

प्रश्न ४ था. दीडशे शब्दांपर्यंत उत्तरे लिहा.

२०

‘नटसम्राट’ या नाटकावर चार प्रश्न विचारणे दोन सोडविणे.

## वार्षिक परीक्षा

वेळ : ३ तास

गुण ८०

- प्रश्न १ ला: खालील प्रश्नांची उत्तरे लिहा. १५
- कादंबरी या साहित्यप्रकाराच्या तात्त्विक मीमांसेवर पाच प्रश्नांपैकी तीन प्रश्न सोडविणे.
- प्रश्न २ रा. वीस शब्दांपर्यंत उत्तरे लिहा. १०
- ‘फकिरा’ या कादंबरीवर सात प्रश्नांपैकी पाच प्रश्न सोडविणे.
- प्रश्न ३ रा. पन्नास शब्दांपर्यंत उत्तरे लिहा. ०५
- ‘फकिरा’ या कादंबरीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
- प्रश्न ४ था. दीडशे शब्दांपर्यंत उत्तरे लिहा. २०
१. ‘नटसम्राट’ या नाटकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
  २. ‘फकिरा’वर कादंबरीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
- प्रश्न ५ वा. तीनशे शब्दांपर्यंत उत्तरे लिहा. ३०
१. ‘नटसम्राट’ या नाटकावर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.
  २. ‘फकिरा’वर कादंबरीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

**S. Y. B. A. (S 2)**

**द्वितीय वर्ष कला (विशेषस्तर २)**

**अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १८१८ ते १९६०)**

उद्दिष्टे :

- १ विशेषस्तरावर अभ्यासाचा प्रारंभ होत असताना, मराठी साहित्याच्या ऐतिहासिक परंपरेचे स्थूल ज्ञान करून देणे.
- २ विशिष्ट कालखंडाच्या पार्श्वभूमीवर साहित्यामागील प्रेरणा, प्रवृत्तींचे ज्ञान करून देणे.
- ३ साहित्यप्रकारांच्या विकसनशील परंपरेचे स्थूल ज्ञान करून देणे.
- ४ पदव्युत्तर अभ्यास करण्याची पूर्वतयारी करणे.

**सत्र पहिले**

**अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १८१८ ते १९२०)**

एकूणतास: ४८

सत्रांत परीक्षा गुण: ६०

१) कालखंड : इ.स. १८१८ ते १८७४

तास : १२

गुण ३०

- १ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.
- २ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.
- ३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

२) कालखंड : इ.स. १८७५ ते १९२०

तास : १२

गुण ३०

- १ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.

- २ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.
- ३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

## द्वितीय सत्र

### अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १९२१ ते १९६०)

एकूणतास: ४८

सत्रांत परीक्षा गुण: ६०

#### १) कालखंड : इ.स. १९२१ ते १९४५

तास : १२

गुण ३०

- १ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.
- २ या कालखंडातील साहित्यनिर्मिती मागील प्रेरणा आणि प्रवृत्ती.
- ३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र, ललितगद्य इ. या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

#### २) कालखंड : इ.स. १९४६ ते १९६०

तास : १२

गुण ३०

- १ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.
- २ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.
- ३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र, ललितगद्य इ. या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

## संदर्भ ग्रंथ

- १ मराठी वाङ्मयाचा इतिहास खंड ४, ५, ६, म.सा.प. पुणे.
- २ अर्वाचीन मराठी गद्याची पूर्वपीठिका- गं.बा. सरदार
- ३ महाराष्ट्र जीवन खंड १ व खंड २ गं. बा. सरदार

- ४ साहित्य समाज आणि संस्कृती- दिंगबर पाध्ये
- ५ मराठी वाङ्मयाचा विवेचक इतिहास - प्र. न. जोशी
- ७ महाराष्ट्राचा सांस्कृतिक इतिहास - शं. दा. पेंडसे
- ८ मराठी गद्याचा इंग्रजी अवतार - द.वा. पोतदार
- ९ मराठी वाङ्मयाची सांस्कृतिक पार्श्वभूमी- गो. म. कुलकर्णी
- १० मराठी कादंबरी पहिले शतक - कुसुमावती देशपांडे
- ११ मराठी कथा उद्गम आणि विकास - इंदुमती शेवडे
- १२ धार आणि काठ - नरहर कुरूंदकर
- १३ मराठी साहित्य प्रेरणा व स्वरूप - गो. मा. पवार
- १४ मराठी कविता: १९४५ ते १९६० - रा. श्री. जोग
- १५ मराठी कादंबरीचा इतिहास - चंद्रकांत बांदिवडेकर
- १६ अर्वाचीन मराठी साहित्याची सांस्कृतिक पार्श्वभूमी - सदा कऱ्हाडे
- १७ आधुनिक मराठी वाङ्मयाचा इतिहास खंड १, २ डॉ.अ.ना.देशपांडे
- १८ प्रदक्षिणा खंड १, २ कॉन्टिनेन्टल , पुणे
- १९ मराठी कादंबरी- प्रेरणा व स्वरूप - कुसुमावती देशपांडे
- २० कादंबरी आणि मराठी कादंबरी- उषा हस्तक
- २१ मराठी प्रादेशिक कादंबरी - डॉ.मदन कुलकर्णी
- २२ कादंबरी - ल.ग.जोग
- २३ एकोणिसावे शतक : सुधारणावाद व मराठी साहित्य - डॉ.सुधाकर शेलार
- २४ मराठी कादंबरी - चंद्रकांत बांदिवडेकर
- २५ खडक आणि पाणी - गंगाधर गाडगीळ
- २६ स्त्री व्यक्तिरेखा : गोनीदांच्या - डॉ. उज्ज्वला देवरे
- २७ मराठी कवितेतील स्त्री चित्रण - डॉ. वेदश्री थिगळे
- २८ महानगरीय कादंबरी : अंशदर्शन - डॉ.आनंदा गांगुर्डे

## प्रश्नपत्रिकेचे स्वरूप व गुण विभागणी आराखडा

### प्रथम सत्र परीक्षा

वेळ : ३ तास

गुण ६०

प्रश्न १ ला: वीस शब्दांपर्यंत उत्तरे लिहा.

२०

प्रथम सत्रातील साहित्यप्रकाराच्या वाटचालीवर चौदा प्रश्नांपैकी दहा प्रश्न सोडविणे.

प्रश्न २ रा : पन्नास शब्दांपर्यंत उत्तरे लिहा.

१५

प्रथम सत्रातील साहित्यप्रकारांच्या विशिष्ट कालखंडातील प्रेरणा आणि प्रवृत्तींवर पाच प्रश्नांपैकी तीन प्रश्न सोडविणे.

प्रश्न ३ रा. पन्नास शब्दांपर्यंत उत्तरे लिहा.

१०

प्रथम सत्रातील साहित्यप्रकारांच्या विशिष्ट कालखंडातील वैशिष्ट्यांवर पाच प्रश्नांपैकी दोन प्रश्न सोडविणे.

प्रश्न ४ था. दीडशे शब्दांपर्यंत उत्तरे लिहा. (वाटचालीवर)

१५

प्रथम सत्रातील साहित्यप्रकाराच्या वाटचालीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

## वार्षिक परीक्षा

वेळ : ३ तास

गुण ८०

प्रश्न १ ला: वीस शब्दांपर्यंत उत्तरे लिहा.

१०

दुसऱ्या सत्रातील साहित्यप्रकाराच्या वाटचालीवर सातप्रश्नांपैकी पाच प्रश्न सोडविणे.

प्रश्न २ रा. पन्नास शब्दांपर्यंत उत्तरे लिहा.

१५

दुसऱ्या सत्रातील साहित्यप्रकारांच्या विशिष्ट कालखंडातील प्रेरणा आणि प्रवृत्तींवर पाच प्रश्नांपैकी तीन प्रश्न सोडविणे.

प्रश्न ३ रा. पन्नास शब्दांपर्यंत उत्तरे लिहा.

०५

दुसऱ्या सत्रातील साहित्यप्रकारांच्या विशिष्ट कालखंडातील वैशिष्ट्यांवर पाच प्रश्नांपैकी दोन प्रश्न सोडविणे.

प्रश्न ४ था. दीडशे शब्दांपर्यंत उत्तरे लिहा

२०

१ प्रथम सत्राच्या साहित्याच्या वाटचालीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

२ द्वितीय सत्राच्या साहित्याच्या वाटचालीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

प्रश्न ५ वा. तीनशे शब्दांपर्यंत उत्तरे लिहा.

३०

१ प्रथम सत्राच्या साहित्याच्या वाटचालीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.

२ द्वितीय सत्राच्या साहित्याच्या वाटचालीवर दोन प्रश्नांपैकी एक प्रश्न सोडविणे.





सावित्रीबाई फुले पुणे विद्यापीठ

मराठी

तृतीय वर्ष कला ( T.Y.B.A )

सन २०१५—१६ पासूनचा पुनर्रचित अभ्यासक्रम

तृतीय वर्ष कला ( T.Y.B.A )

मराठी ( सामान्यस्तर पेपर –३)

पुनर्रचित अभ्यासक्रम आराखडा

सन २०१५–२०१६ पासून

आधुनिक मराठी साहित्य आणि व्यावहारिक व उपयोजित मराठी

➤ अभ्यासक्रमाची उद्दिष्टे :-

१. आधुनिक मराठी साहित्यातील विविध साहित्यप्रकारांचा परिचय वाढविणे. त्यांचे आकलन करून घेणे साहित्याबद्दलची अभिरुची विकसित करून कलाकृतींचा आस्वाद घेण्याची क्षमता वाढविणे.
२. नेमलेल्या कलाकृतींच्या संदर्भात साहित्यपरंपरेचा स्थूल परिचय करून देणे.
३. भाषेचे यथोचित आकलन करण्याची व वापर करण्याची यथायोग्य क्षमता विकसित करणे.
४. 'निबंध' व 'प्रवासवर्णन' या साहित्यप्रकारांचे तात्त्विक विवेचन करणे
५. विद्यार्थ्यांची वाचन व लेखन क्षमता विकसित करून त्यांना ग्रंथपरीक्षणाची आवड निर्माण व्हावी, यासाठी प्रवृत्त करणे.

तृतीय वर्ष कला ( T.Y.B.A )  
मराठी ( सामान्यस्तर पेपर -३)  
प्रथम सत्र

एकूण तासिका— ४८

एकूण गुण — ६०

घटक अ — ग्रंथ परीक्षण

गुण — १५

तासिका — १२

- ग्रंथ परीक्षणाचे स्वरूप स्पष्ट करून ग्रंथ परीक्षणाच्या घटकांचे विवेचन करणे.
- विविध साहित्यप्रकारातील साहित्यकृतींचे परीक्षण कसे करावे ते विद्यार्थ्यांना समजावून सांगणे.
- ग्रंथ परीक्षणांच्या तात्त्विक विवेचनासाठी एकूण ८ गुण असतील तर प्रत्यक्ष साहित्यकृतीच्या परीक्षणासाठी एकूण ७ गुण असतील.

सूचना :-

१. विविध साहित्यप्रकारांतील पुस्तकांचे परीक्षण कसे करावे, यासंबंधी सप्रमाण विवेचन वर्गात केले जावे अशी अपेक्षा आहे.
२. विद्यार्थ्यांनी पदवी पर्यंतच्या विद्यापीठीय अभ्यासक्रमात समाविष्ट असलेल्या साहित्यकृतीं व्यतिरिक्त पुस्तकाचे परीक्षण करावे.

घटक ब — निबंध : तात्त्विक विवेचन

गुण — १५

तासिका — १२

- निबंध या साहित्यप्रकाराचे स्वरूप व व्याख्या
- मराठीतील इतर साहित्यप्रकारांच्या तुलनेत निबंधाचे वेगळेपण
- निबंधाचे प्रकार
- निबंध या साहित्यप्रकारामागील प्रेरणा व प्रयोजने

घटक क — निबंधसंग्रह

गुण — ३०  
तासिका — २४

‘विचारधारा’ — संपा— डॉ. स्नेहल तावरे  
डॉ. भास्कर शेळके

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तृतीय वर्ष कला ( T.Y.B.A )

मराठी ( सामान्यस्तर पेपर — ३)

द्वितीय सत्र

एकूण तासिका— ४८

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घटक अ — प्रवासवर्णन : तात्त्विक विवेचन

गुण — १५  
तासिका — १२

- प्रवासवर्णन या साहित्यप्रकाराचे स्वरूप व व्याख्या
  - इतर साहित्यप्रकारांच्या तुलनेत प्रवासवर्णनाचे वेगळेपण
  - प्रवासवर्णन या साहित्य प्रकारामागील प्रेरणा व प्रयोजने
- 

घटक ब — प्रवासवर्णन साहित्यप्रकाराची वैशिष्ट्ये, व्याप्ती आणि वाटचाल

गुण — १५  
तासिका — १२

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घटक क — प्रवासवर्णनसंग्रह

गुण — ३०  
तासिका — २४

‘देशविदेश’ — संपा— डॉ. स्नेहल तावरे  
डॉ. अशोक शिंदे  
डॉ. अरुण कोळेकर

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संदर्भ ग्रंथ :-

१. लघुनिबंध ते मुक्तगद्य — वि.शं. चौगुले
२. ग्रंथसंवाद — वि.शं. चौगुले
३. मराठी लघुनिबंधाचा इतिहास — डॉ. आनंद यादव
४. निबंध : शास्त्र व कला — डॉ. प्र. न जोशी
५. निबंधलेखन — निर्मला किराणे
६. मराठी निबंध — प्रा. म. वि फाटक
७. प्रतिभासाधन — ना. सी फडके
८. 'प्रदक्षिणा' मधील लेख — वि. ह कुलकर्णी
९. आधुनिक मराठी वाङ्मय इतिहासाचे खंड
१०. मराठी प्रवासवर्णनांची वाटचाल — डॉ. नीला पांढरे
११. प्रवासवर्णने — वसंत सावंत

तृतीय वर्ष कला ( T.Y.B.A )

मराठी ( सामान्यस्तर पेपर — ३ )

प्रथम सत्र

प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा

वेळ — २ तास

एकूण गुण — ६०

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प्रश्न. १ ला. खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा.

१० प्रश्न विचारावेत पैकी कोणतेही ७ प्रश्न सोडवावेत. गुण — १४.

प्रश्न. २ रा. खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा.

४ प्रश्न विचारावेत पैकी कोणतेही २ प्रश्न सोडवावेत. गुण — ०८.

प्रश्न. ३ रा. खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा.

४ प्रश्न विचारावेत पैकी कोणतेही ३ प्रश्न सोडवावेत. गुण — १८.

प्रश्न. ४ था. खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा.

४ प्रश्न विचारावेत पैकी कोणतेही २ प्रश्न सोडवावेत. गुण — २०.

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**तृतीय वर्ष कला ( T.Y.B.A )**  
**मराठी ( सामान्यस्तर पेपर – G-3 )**  
**द्वितीय सत्र**

**वार्षिक प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा**

**अभ्यासक्रम:—१) ग्रंथपरीक्षण**

२) 'विचारधारा' — संपा. डॉ. स्नेहल तावरे / डॉ. भास्कर शेळके

३) 'देशविदेश'— संपा. डॉ. स्नेहल तावरे / डॉ. अशोक शिंदे / डॉ. अरुण कोळेकर

वेळ — ३ तास

एकूण गुण — ८०

**प्रश्न. १ ला. खालील प्रश्नांची उत्तरे लिहा.**

अ) ग्रंथ परीक्षण : तात्त्विक विवेचन या घटकावर २ प्रश्न विचारावेत पैकी गुण — ०८  
कोणताही १ सोडवावा.

ब) कोणत्याही एका ग्रंथाचे परीक्षण करावे. गुण — ०८

**प्रश्न. २ रा. खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा.**

गुण — १२.

अ) प्रवासवर्णन तात्त्विक विवेचन यावर ५ प्रश्न विचारावेत पैकी कोणतेही ३ सोडवावेत.

ब) 'देशविदेश' या प्रवासवर्णनसंग्रहावर ५ प्रश्न विचारावेत पैकी कोणतेही ३ सोडवावेत.

**प्रश्न. ३ रा. खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा.**

गुण— १२.

अ) प्रवासवर्णन — वैशिष्ट्ये, व्याप्ती आणि वाटचाल यावर २ प्रश्न विचारावेत पैकी  
कोणताही १ प्रश्न सोडवावा.

ब) 'देशविदेश' या प्रवासवर्णनसंग्रहावर २ प्रश्न विचारावेत पैकी कोणताही १ प्रश्न सोडवावा.

**प्रश्न. ४ था. खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा.**

गुण — २०

अ) 'विचारधारा' या निबंधसंग्रहावर २ प्रश्न विचारावेत पैकी कोणताही १ प्रश्न सोडवावा.

ब) 'देशविदेश' या प्रवासवर्णनसंग्रहावर २ प्रश्न विचारावेत पैकी कोणताही १ प्रश्न सोडवावा.

**प्रश्न. ५ था. खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा.**

गुण— २०

अ) 'विचारधारा' या निबंधसंग्रहावर २ प्रश्न विचारावेत पैकी कोणताही १ प्रश्न सोडवावा.

ब) 'देशविदेश' या प्रवासवर्णनसंग्रहावर २ प्रश्न विचारावेत पैकी कोणताही १ प्रश्न सोडवावा.

**तृतीय वर्ष कला ( T.Y.B.A )**  
**मराठी**  
( पर्यायी अभ्यासक्रम )  
**व्यावहारिक आणि उपयोजित मराठी**

❖ **अभ्यासक्रमाची वैशिष्ट्ये :-**

१. संज्ञापनातील भाषेची भूमिका, स्वरूप समजावून घेणे. भाषिक कौशल्ये, क्षमता विकसित करणे
२. भाषिक कौशल्याचे विविध आविष्कार आणि संपर्कमाध्यमे यांचा परस्परसंबंध समजावून घेणे व उपयोजन करणे.
३. मराठीचा कार्यालयीन, व्यावसायिक कामकाजात होणारा वापर, गरज व स्वरूप विशेषांची माहिती घेणे.
४. कार्यालयीन व व्यावसायिक भाषाव्यवहारासाठी आवश्यक लेखनकौशल्याचे संपादन करणे.
५. मुद्रित व इलेक्ट्रॉनिक माध्यमांच्या कामकाज पद्धतीचा आढावा घेणे.

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**प्रथम सत्र**  
**उपयोजित मराठी**  
(पर्यायी अभ्यासक्रम)

**एकूण तासिका : ४८**

१. विविध प्रसारमाध्यमांची ओळख – (Print and Electronic Media) वृत्तपत्रे, आकाशवाणी, दूरदर्शन, माध्यमांचे सामर्थ्य व मर्यादा – जनसंपर्क, माध्यमांचा जनमानसावर होणारा परिणाम – प्रसारमाध्यमांसाठी लेखन स्वरूप, तंत्रे व कौशल्ये, प्रसारमाध्यमातील भाषेचे स्वरूप.
२. वृत्तपत्रांसाठी लेखन— बातमी, स्तंभलेखन, अग्रलेख, मुलाखत.



३. प्रसारमाध्यमांतील जाहिरातींचे लेखन —विविध प्रसारमाध्यमांतील जाहिरातींमध्ये लेखन — विविध प्रसारमाध्यमांतील जाहिरातींमध्ये मराठी भाषेचे स्थान. जाहिरात — स्वरूप व मांडणी, जाहिरातींचा मसुदा, घोषवाक्य, बोधचिन्ह इत्यादी — प्रभावी जाहिरातींचे रसग्रहण — जाहिरात लेखन.

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## द्वितीय सत्र

एकूण तासिका : ४८

### ४. आकाशवाणीसाठी लेखन :-

भाषण, मुलाखत, रूपक, संवाद, बातम्यांचे लेखन — विशेष वृत्तान्ताचे लेखन — श्रुतिका, नभोनाट्य रूपांतर, शैक्षणिक कार्यक्रमांचे लेखन इ.

### ५. दूरचित्रवाणीसाठी लेखन :-

दूरचित्रवाणी या माध्यमाचे वेगळेपण — तांत्रिक माहिती, दृश्यभाषा — भाषण, मुलाखत, संवाद, बातम्या— निवेदन, सूत्रसंचालन, माहितीपट, रूपक (स्थूलदर्शनात्मक, व्यक्तिदर्शनात्मक, माहितीपर इ.) लघुपट मालिका इ. साठी लेखन.

### ❖ स्वाध्याय :-

१. एकाच घटनेबद्दल विविध वृत्तपत्रांत आलेल्या बातम्यांचे संकलन करणे.
२. कार्यक्रमांना उपस्थित राहून त्यावर विविध माध्यमांसाठी बातमी लेखन करणे.
३. वर्तमानपत्रातील आकर्षक वृत्तलेखकांचे तसेच स्फुट—अग्रलेख आणि परीक्षणांची कात्रण काढून परिशीलन करणे.
४. विविध माध्यमांसाठी प्रत्यक्ष मुलाखत घेणे.
५. आकाशवाणीवरील बातम्या ऐकून त्यांचे पुनर्लेखन करणे.
६. सभोवतालच्या घडामोडी जाणून घेऊन, विविध कार्यक्रमांना उपस्थित राहून त्याआधारे आकाशवाणीसाठी वार्तापत्र तयार करणे.

७. वर्तमानपत्रांच्या बातम्यांच्या आधारे आकाशवाणीसाठी जिल्ह्याचे वार्तापत्र लिहिणे.
८. आकाशवाणीचे विविध कार्यक्रम ऐकणे.
९. दूरदर्शवरील बातम्या, चर्चा व अन्य माहितीपर कार्यक्रमांचे अवलोकन करणे.
१०. वर्तमानपत्रातील बातम्यांच्या आधारे दूरदर्शनसाठी जिल्हा वार्तापत्र लिहिणे
११. परिसरातील वैशिष्ट्यपूर्ण स्थळांवर माहितीपट लेखन.
१२. विविध माध्यमांतील जाहिरातीचे नमुने संग्रहित करून अभ्यासणे.

### संदर्भ पुस्तके:—

१. व्यावहारिक मराठी पाठ्यपुस्तक — पुणे विद्यापीठ प्रकाशन. प्रथम वर्ष वाणिज्य व द्वितीय वर्ष विज्ञान
२. व्यावहारिक मराठी — डॉ. कल्याण काळे आणि डॉ. द. दि. पुंडे
३. व्यावहारिक मराठी — ल. रा. नसिराबादकर
४. व्यावहारिक मराठी (संपा.) डॉ. स्नेहल तावरे
५. वृत्तपत्र तत्त्वज्ञान — डॉ. सुधाकर पवार, महाराष्ट्र विद्यापीठ, ग्रंथनिर्मिती मंडळ, नागपूर.
६. वार्तासंकलन मराठी — चंद्रकांत ताम्हाणे
७. व्यावहारिक मराठी — प्रकाश परब.
८. उपयोजित अभ्यासक्रम — मराठी भाषेची संवादकौशल्ये — यशवंतराव चव्हाण महाराष्ट्र मुक्त विद्यापीठ — नाशिक.
९. व्यावहारिक, उपयोजित मराठी आणि प्रसारमाध्यमे — संपादक — डॉ. संदीप सांगळे
१०. आजच्या ठळक बातम्या — समीरण वाळवेकर
११. पत्रकारिता विद्या — एस.के. कुलकर्णी
१२. व्यावहारिक मराठी भाषा — शरदिनी मोहिते

१३. व्यासपीठ — महादेव वाळुंज
१४. व्यावहारिक मराठी — डॉ. लीला गोविलकर व डॉ. जयश्री पाटणकर
१५. माध्यम चित्रवाणी — लेखक — आकाशानंद, ग्रंथघर प्रकाशन, मुंबई.
१६. व्यावहारिक मराठी — डॉ. सयाजीराजे मोकाशी व डॉ. रंजना नेमाडे
१७. व्यावहारिक आणि उपयोजित मराठी — डॉ. मनोहर रोकडे
१८. जाहिरातशास्त्र — डॉ. वंदना खेडीकर
१९. व्यावहारिक व व्यावसायिक लेखन प्रणाली — डॉ. मधुकर मोकाशी
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तृतीय वर्ष कला ( T.Y.B.A )

व्यावहारिक व उपयोजित मराठी — (पर्यायी अभ्यासक्रम)

प्रथम सत्र

प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा

वेळ — २ तास

एकूण गुण — ६०

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प्र. १ला — खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा. गुण — १४

यामध्ये एकूण १० प्रश्न विचारावेत, पैकी कोणतेही ७ प्रश्न सोडवावेत.

प्रश्न २रा — खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा. गुण — ८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा — खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा. गुण — १८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही ३ प्रश्न सोडवावेत.

प्रश्न ४ था — खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा. गुण — २०

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

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**तृतीय वर्ष कला ( T.Y.B.A )**  
**व्यावहारिक व उपयोजित मराठी**  
**(पर्यायी अभ्यासक्रम)**  
**वार्षिक प्रश्नपत्रिका स्वरूप आणि गुणविभागणी आराखडा**  
**(सन २०१५ - १६ पासून)**

वेळ - ३ तास

गुण - ८०

प्र. १ला - खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा.

गुण - २०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण १३ प्रश्न विचारावेत, पैकी कोणतेही १० प्रश्न सोडवावेत.

प्रश्न २रा - खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा.

गुण - १०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा - खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा.

गुण - २०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

प्रश्न ४ था - खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा.

गुण - ३०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

तृतीय वर्ष कला ( T.Y.B.A )  
मराठी ( विशेषस्तर पेपर –३ ) ( S-3 )  
पुनर्रचित अभ्यासक्रम आराखडा  
सन २०१५-२०१६ पासून

साहित्यविचार – S-3

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❖ अभ्यासक्रमाची उद्दिष्ट्ये:-

- १) साहित्याचे स्वरूप समजावून घेणे.
  - २) साहित्याची प्रयोजने समजावून घेणे.
  - ३) साहित्यनिर्मितीची प्रक्रिया समजावून घेणे.
  - ४) साहित्याची भाषा समजावून घेणे.
  - ५) साहित्याची आस्वाद प्रक्रिया समजावून घेणे.
  - ६) साहित्यिक अभिरुची समजावून घेणे.
  - ७) साहित्य आणि समाज यातील परस्परसंबंध समजावून घेणे.
  - ८) साहित्यप्रकाराची संकल्पना समजावून घेणे.
  - ९) वाङ्मयीन मूल्ये समजावून घेणे
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## प्रथम सत्र

एकूण तासिका— ४८

### १. साहित्याचे स्वरूप:—

- १) शास्त्रीय साहित्य आणि ललित साहित्य यांमधील भेद
- २) साहित्याचे शब्दरूप
- ३) साहित्यातून व्यक्त होणाऱ्या अनुभवांचे विशेष — वास्तव आणि कल्पित यांचा संबंध, संवेदनात्मकता — भावनात्मकता — वैचारिकता, सेंद्रियत्व, सूचकता, विशिष्ट आणि विश्वात्मकता.

### २. साहित्याचे प्रयोजन:—

- १) प्रयोजन म्हणजे काय?
- २) प्रयोजन आणि परिणाम यांमधील भेद.
- ३) साहित्याची प्रयोजने —
  - अ) मम्मटाची प्रयोजने
  - ब) पाश्चात्यांची प्रयोजने:— इच्छापूर्ती — जिज्ञासातृप्ती — विरेचन — आत्माविष्कार अनुभवविश्वाची समृद्धी — स्वप्नरंजन—उद्बोधन—प्रचार—मनोरंजन—आनंद.
- ४) या प्रयोजनांचा लेखक व वाचक तसेच कलावादी, जीवनवादी या दृष्टीने विचार.

### ३. साहित्याची निर्मितीप्रक्रिया:—

- १) साहित्याच्या निर्मितीचे स्वरूप
- २) साहित्यनिर्मितीच्या शक्ती—१) प्रतिभा २) कल्पनाशक्ती ३) स्फूर्ती
- ३) प्रतिभाव्यापार व स्वप्नव्यापार
- ४) साहित्याची निर्मिती प्रक्रिया आणि साहित्यकाचे व्यक्तिमत्त्व — १) संवेदनक्षमता

२) शैशववृत्ती ३) अनुभव समृद्धी ४) विद्वत्ता ५)लेखकाचा जीवनविषयक दृष्टिकोण. ६) लेखकाचा साहित्यविषयक दृष्टिकोण.

#### ४. साहित्याची भाषा:—

- १) व्यवहारभाषा, शास्त्रीय साहित्याची भाषा व साहित्याची भाषा यांच्यातील भेद.
- २) शब्दार्थाचा वक्रव्यापार
- ३) भाषेचे नादरूप
- ४) अलंकार
- ५) रूपक
- ६) प्रतिमा
- ७) प्रतीक
- ८) प्राक्कथा
- ९) शैली विचार — १) लेखक तशी शैली २) आशय तशी शैली ३) साहित्यप्रकार तशी शैली.

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#### द्वितीय सत्र

एकूण तासिका— ४८

#### ५. साहित्याचा आस्वाद:—

- १) आस्वाद म्हणजे काय ?
- २) आस्वाद प्रक्रिया
- ३) आस्वादकाला आवश्यक असणारे गुण
- ४) आस्वादातील अडथळे

#### ६. साहित्याची सामाजिकता:—

- १) साहित्य आणि समाज यांचे परस्परसंबंध
- २) लेखकाची सामाजिकता



- ३) भाषेची सामाजिकता
- ४) कलात्मक अनुभवातील सामाजिकता
- ५) वाचकाची सामाजिकता
- ६) साहित्यातील सामाजिकतेला वैश्विक रूप प्राप्त होते काय?
- ७) बांधीलकीची संकल्पना व साहित्यिकाची बांधीलकी.

### ७. साहित्यिक अभिरुची

- १) अभिरुची म्हणजे काय?
- २) अभिरुची आणि सौंदर्यदृष्टी.
- ३) अभिरुची आणि औचित्य.
- ४) अभिरुची भिन्नतेची कारणे.
- ५) अभिरुची नियत करणारे घटक — सांस्कृतिक पर्यावरण, आर्थिक पर्यावरण, वाङ्मयीन पर्यावरण.

### ८. साहित्यप्रकाराची संकल्पना:—

- १) साहित्याच्या वर्गीकरणाची शक्यता
  - २) साहित्याच्या वर्गीकरणाची आवश्यकता
  - ३) साहित्याच्या वर्गीकरणाची तत्त्वे— माध्यमभिन्नता, प्रस्तुतीकरणाची पद्धती, प्रस्तुतीकर्त्याचा दृष्टिकोण व प्रस्तुतीकरणाचा काळ
  - ४) साहित्याचे ठळक प्रकार — कथा, कादंबरी, काव्य, नाटक.
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### संदर्भ साहित्य

- १) साहित्यविचार — डॉ. अ. वा कुलकर्णी
- २) साहित्यविचार (संपा.) डॉ. द.दि.पुंडे, डॉ.स्नेहल तावरे
- ३) काव्यशास्त्र प्रदीप — डॉ. स.रा.गाडगीळ
- ४) वाङ्मयीन शैली आणि तंत्र — म.द.हातकणंगलेकर,
- ५) साहित्यविचार — भालचंद्र खांडेकर

- ६) साहित्य व सामाजिक संदर्भ — रा.ग.जाधव
  - ७) साहित्य व समाज — संपादक डॉ. विलास खोले
  - ८) साहित्य व सामाजिक संदर्भ — डॉ. अंजली सोमण
  - ९) कविता आणि प्रतिमा — सुधीर रसाळ
  - १०) सृजनात्मक लेखन — डॉ. आनंद पाटील
  - ११) काव्याची भूषणे— प्रा.म.वा.धोंड
  - १२) साहित्यशास्त्र स्वरूप व समस्या — डॉ. वसंत पाटणकर
  - १३) आधुनिक मराठी साहित्य व सामाजिकता —संपादन—डॉ.विद्यागौरी टिळक,  
डॉ. मृणालिनी शहा.
  - १४) साहित्यमीमांसा व समाजदर्शन — डॉ. स.रा.गाडगीळ
  - १५) भारतीय साहित्यविचार — ग.त्र्यं. देशपांडे
  - १६) भारतीय साहित्यविचार — डॉ. लीला गोविलकर
  - १७) साहित्यविचार — डॉ. चं.वि.जोशी, डॉ. वेदश्री थिगळे
  - १८) पाश्चात्य साहित्यविचार — बालशंकर देशपांडे
  - १९) साहित्य स्वरूप आणि समीक्षा— वा. ल. कुलकर्णी
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तृतीय वर्ष कला ( T.Y.B.A )

साहित्यविचार S-3

प्रथम सत्र

प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा

वेळ — २ तास

एकूण गुण — ६०

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प्र. १ला — खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा. गुण — १४

यामध्ये एकूण १० प्रश्न विचारावेत, पैकी कोणतेही ७ प्रश्न सोडवावेत.

प्रश्न २रा — खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा. गुण — ८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा — खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा. गुण — १८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही ३ प्रश्न सोडवावेत.

प्रश्न ४ था — खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा. गुण — २०

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

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**तृतीय वर्ष कला ( T.Y.B.A )**  
**साहित्यविचार S-3**  
**वार्षिक प्रश्नपत्रिका स्वरूप आणि गुणविभागणी आराखडा**  
**(सन २०१५ – १६ पासून)**

वेळ — ३ तास

गुण — ८०

प्र. १ला — खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा.

गुण — २०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण १३ प्रश्न विचारावेत, पैकी कोणतेही १० प्रश्न सोडवावेत.

प्रश्न २रा — खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा.

गुण — १०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा — खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा.

गुण — २०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

प्रश्न ४ था — खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा.

गुण — ३०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

तृतीय वर्ष कला (T.Y.B.A)  
मराठी ( विशेषस्तर पेपर -४ )  
भाषाविज्ञान - S<sub>4</sub>  
पुनर्रचित अभ्यासक्रम आराखडा  
सन २०१५-२०१६ पासून  
भाषाविज्ञान- वर्णनात्मक आणि ऐतिहासिक

❖ अभ्यासक्रमाची उद्दिष्ट्ये:-

- १) भाषेचे स्वरूप व कार्य, भाषेच्या अभ्यासाचे महत्त्व, भाषेच्या अभ्यासाची प्रमुख अंगे जाणून घेणे.
- २) भाषा म्हणजे काय व तिचे मानवी जीवनातील कार्य व महत्त्व जाणून घेणे.
- ३) वेगवेगळ्या भाषाअभ्यासपद्धतींचे वेगळेपण व महत्त्व जाणून घेणे.
- ४) स्वननिर्मितीची प्रक्रिया समजावून घेणे.
- ५) वागिंद्रियांची रचना व कार्ये समजावून घेणे.
- ६) स्वनविज्ञान, स्वनिम संकल्पना आणि मराठीची स्वनिम व्यवस्था जाणून घेणे.
- ७) मराठीची रूपिमव्यवस्था समजावून घेणे.
- ८) वाक्यविन्यास व अर्थविन्यास या भाषावैज्ञानिक संकल्पनांचा मराठीच्या संदर्भात स्थूल परिचय.
- ९) ऐतिहासिक भाषाभ्यासपद्धतीचे स्वरूप व महत्त्व लक्षात घेणे.
- १०) भाषाकुलाची संकल्पना जाणून घेवून मराठी भाषेच्या उत्पत्तीचा अभ्यास करणे.
- ११) मराठी भाषेचा उत्पत्तीकाळ जाणून घेवून तत्कालीन भाषिक स्थित्यंतरांचा आढावा घेणे.
- १२) टप्याटप्याने भाषा म्हणून मराठीच्या वाटचालीचा ऐतिहासिक आढावा घेणे.

## प्रथम सत्र

एकूण तासिका— ४८

१. **भाषेचे स्वरूप व कार्य** :-भाषा एक सहज क्रिया — भाषा : एक अर्जित वस्तू — संज्ञापन : भाषेचे मुख्य कार्य — संकेत : भाषेचा आधार — शारीरिक आणि मानसिक क्रियांचा संयोग — ध्वनिसंकेत : चिन्ह आणि चिन्हित — संज्ञापनाची अन्य साधने: शरीरस्थित — संज्ञापनाची साधने: शरीरबाह्य — भाषा हे सर्वश्रेष्ठ संज्ञापन साधन — संज्ञापनातील क्रिया प्रतिक्रिया — मानवेतर प्राण्यांची भाषा — भाषा : एक सामाजिक संस्था — भाषा आणि व्यक्तिस्वातंत्र्य — भाषेच्या अभ्यासाची आवश्यकता. भाषाअभ्यासाची अंगे, भाषाभ्यास पद्धती —वर्णनात्मक भाषाभ्यासपद्धती, ऐतिहासिक भाषाभ्यासपद्धती, तौलनिक भाषाभ्यासपद्धती, समाजभाषाभ्यासपद्धती.
२. **स्वनविज्ञान आणि स्वननिर्मिती** :- वागिंद्रियाची रचना व कार्ये स्वनविज्ञानाचे स्वरूप—स्वन निर्माण करणारी इंद्रिये—जिभेचे महत्त्व—स्वननिर्मितीची प्रक्रिया—मुखमार्ग, नासिकामार्ग आणि पडजीभ— दात आणि ओठ यांचे कार्य—तालुपटाची रचना व कार्य—स्वरांचे स्वरूप, लक्षणे व प्रकार—व्यंजनांचे स्वरूप लक्षणे व प्रकार—स्वरांच्या वर्गीकरणाची तत्त्वे— स्वननिर्मितीमधील 'प्रयत्ना'चे स्वरूप.
३. **स्वनिम विचार** :- स्वनिम निश्चितीचे तत्त्वे, विनियोग संकल्पनेचा स्थूल परिचय, स्वन, स्वनिम व स्वनांतर यामधील परस्परसंबंध, मराठी स्वनिमव्यवस्थेची रूपरेषा, स्वरस्वनिम, अर्धस्वरस्वनिम, व्यंजनस्वनिम यांचे वर्गीकरण.
४. **रूपिम विचार** :- रूपिमचे तत्त्व, रूपिका—रूपिम आणि रूपिकांतर यामधील परस्परसंबंध, रूपिकांचे प्रकार प्रकृति (धातू) आणि प्रत्यय यांचे वर्गीकरण (आशयबोधक रूपिम व कार्यकारी रूपिम)

## द्वितीय सत्र

एकूण तासिका— ४८

५. **वाक्यविचार** — वाक्यविन्यास संकल्पना आणि मराठीतील वाक्यविन्यास व्यवस्था, वाक्याचे घटक
  ६. **अर्थविचार** — अर्थविन्यास व मराठीतील त्याचे स्वरूप, अर्थ ही संकल्पना, अर्थाचे विविध प्रकार
  ७. **ऐतिहासिक भाषाभ्यासपध्दती** — सर विल्यम जोन्स यांचा सिद्धांत — ऐतिहासिक भाषाविज्ञानाचे स्वरूप — कार्य, **भाषाकुलाची संकल्पना** — भाषांचे वर्गीकरण — जगातील प्रमुख भाषाकुले — इंडो युरोपियन भाषाकुल — आर्य भाषाकुल व मराठी भाषा — होन्ल्ले यांचा अंतर् बहिर् वर्तुळ सिद्धांत.
  ८. **मराठी भाषेची उत्पत्ती** :— मराठी भाषेची उत्पत्ती व त्यासंबंधीची साधने — मराठी भाषेच्या उत्पत्ती संबंधी विविध सिद्धांत — वैद्य—गुणे वाद, मराठीचे कालिक भेद
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## ❖ संदर्भ साहित्य

१. भाषाविज्ञान : वर्णनात्मक व ऐतिहासिक — संपादक— मालशे, इनामदार, सोमण.
  २. भाषा: इतिहास आणि भूगोल — डॉ. ना. गो कालेलकर.
  ३. ऐतिहासिक भाषाशास्त्र — डॉ. र. रा गोसावी
  ४. वर्णनात्मक भाषाविज्ञान— स्वरूप आणि पध्दती — संपादक— डॉ. काळे, डॉ. सोमण.
  ५. भाषा — अंतःसूत्र आणि व्यवहार— संपादक— मुं. ग पानसे.
  ६. भाषा व संस्कृती — डॉ. ना. गो. कालेलकर.
  ७. अभिनव भाषाविज्ञान — डॉ. गं. ना. जोगळेकर
  ८. भाषाविज्ञान परिचय — डॉ. मालशे, डॉ. सोमण, डॉ. पुंडे
  ९. वर्णनात्मक भाषाविज्ञान — डॉ. लीला गोविलकर
  १०. भाषाशास्त्र विचार — डॉ. र. बा मंचरकर
  ११. मराठी भाषेचा आर्थिक संसार — अशोक केळकर
  १२. मराठीचे वर्णनात्मक भाषाविज्ञान — डॉ. महेंद्र कदम
  १३. मराठीचा भाषिक अभ्यास — संपादक मु. श्री. कानडे
  १४. सुबोध भाषाशास्त्र — डॉ. प्र. न. जोशी
  १५. मराठी भाषेचा इतिहास — डॉ. गं. ना जोगळेकर
  १६. सुलभ भाषाविज्ञान — डॉ. द. दि. पुंडे
  १७. सामाजिक भाषाविज्ञान — संपादक डॉ. जयश्री पाटणकर
  १८. सामाजिक भाषाविज्ञान व बोली— डॉ. शशिकला कांबळे
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तृतीय वर्ष कला (T.Y.B.A)  
मराठी ( विशेषस्तर पेपर -४ )  
भाषाविज्ञान - S-4  
सन २०१५-२०१६ पासून  
प्रथम सत्र

प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा

(सन २०१५-२०१६ पासून)

वेळ - २ तास

एकूण गुण - ६०

प्र. १ला. खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा. गुण - १४

यामध्ये एकूण १० प्रश्न विचारावेत, पैकी कोणतेही ७ प्रश्न सोडवावेत.

प्रश्न २रा. खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा. गुण - ०८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा. खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा. गुण - १८

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही ३ प्रश्न सोडवावेत.

प्रश्न ४ था. खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा. गुण - २०

यामध्ये एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

तृतीय वर्ष कला (T.Y.B.A)  
मराठी ( विशेषस्तर पेपर -४ )  
भाषाविज्ञान - S-4

वार्षिक प्रश्नपत्रिका स्वरूप व गुणविभागणी आराखडा

(सन २०१५-२०१६ पासून)

वेळ - ३ तास

गुण - ८०

प्र. १ला. खालील प्रश्नांची २० शब्दांपर्यंत उत्तरे लिहा. गुण - २०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण १३ प्रश्न विचारावेत, पैकी कोणतेही १० प्रश्न सोडवावेत.

प्रश्न २रा. खालील प्रश्नांची ५० शब्दांपर्यंत उत्तरे लिहा. गुण - १०

यामध्ये द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण ४ प्रश्न विचारावेत, पैकी कोणतेही २ प्रश्न सोडवावेत.

प्रश्न ३रा. खालील प्रश्नांची १५० शब्दांपर्यंत उत्तरे लिहा. गुण - २०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

प्रश्न ४ था. खालील प्रश्नांची ३०० शब्दांपर्यंत उत्तरे लिहा. गुण - ३०

अ) प्रथम सत्रातील अभ्यासक्रमाशी संबंधित २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

ब) द्वितीय सत्रातील अभ्यासक्रमाशी संबंधित एकूण २ प्रश्न विचारावेत, पैकी कोणताही १ प्रश्न सोडवावा.

**Revised Syllabi for Three - Year Integrated  
B.Com. Degree course  
(From June 2013)**

**1) INTRODUCTION**

The revised syllabi for B.Com Degree Course will be introduced in the following order.

- |      |                    |           |
|------|--------------------|-----------|
| i)   | First Year B.Com.  | 2013-2014 |
| ii)  | Second Year B.Com. | 2014-2015 |
| iii) | Third Year B.Com.  | 2015-2016 |

The B.Com. Degree Course (Revised Structure) will consist of three Years. The first year annual examination will be held at the end of the first year. The Second Year annual examination will be held at the end of the second year. The Third annual examination shall be held at the end of the third year.

**2) ELIGIBILITY**

1. No Candidates shall be admitted to enter the First Year of the B.Com. Degree Course (Revised Structure) unless he/she has passed the Higher Secondary School Certificate Examination of the Maharashtra State Board of Higher Secondary Education Board or equivalent or University with English as a passing subject.
2. No candidate shall be admitted to the annual examination of the First year B.Com. (Revised Structure) unless he/ she has satisfactorily kept two terms for the course at the college at the college affiliated to this University.
3. No candidate shall be admitted to the annual examination of the Second Year unless he/she has kept two terms satisfactorily for the course at the college affiliated to this University.
4. No candidate shall be admitted to the Third year of the B.Com. Degree Course (Revised Structure) unless he/she has passed in all the papers at the First Year B.Com. Examination and has passed in all the papers at the first Year B.Com. Examination and has satisfactorily kept terms for the second year and also two terms for the third year of B.Com. satisfactorily in a college affiliated to this University.

**3) A.T.K.T. Rules :**

As far as A.T.K.T. is concerned, a student who fails in two theories and one practical head of passing at F.Y.B.Com may be admitted to S.Y.B.Com. likewise a student who fails in the two theory and one practical head of passing at S.Y.B.Com may be admitted to T.Y.B.Com. But a student passing S.Y.B.Com but fails in any subject at F.Y.B.Com cannot be admitted to T.Y.B.Com.

4) (A) Revised Structure of B.Com. Course.

<b>F.Y.B.Com. w.e.f. 2013-14</b>	
<b>Sr. No.</b>	<b>Compulsory / Main Subjects</b>
<b>101</b>	Compulsory English
<b>102</b>	Financial Accounting
<b>103</b>	Business Economics (Micro)
<b>104 (A)</b>	Business Mathematics and Statistics
	or
<b>104 (B)</b>	Computer Concepts and Applications
<b>105</b>	<b>Optional Group (Any one of the following)</b> a) Organizational Skill Development. b) Banking & Finance c) Commercial Geography d) Defense Organization and Management in India e) Co-Operation. f) Managerial Economics
<b>106</b>	<b>Optional Group (Any one of the following)</b> a) Essentials of E-Commerce b) Insurance & Transport c) Marketing & Salesmanship d) Consumer Protection & Business Ethics. e) Business Environment & Entrepreneurship f) Foundation Course in Commerce
<b>107</b>	<b>(Any one of the language from the following groups)</b> <b>Modern Indian Languages (M.I.L.) -:</b> Compulsory English / Marathi / Hindi / Gujarathi / Sindhi / Urdu / Persian.  <b>Modern European Languages (M.E.L.) -:</b> French / German.  <b>Ancient Indian Languages (A.I.L.) -:</b> Sanskrit.  <b>Arabic.</b>

<b>S.Y.B.Com. w.e.f. 2014-15</b>	
<b>Sr. No.</b>	<b>Compulsory / Main Subjects</b>
<b>201</b>	Business Communication.
<b>202</b>	Corporate Accounting.
<b>203</b>	Business Economics (Macro)
<b>204</b>	Business Management
<b>205</b>	Elements of Company Law
<b>206</b>	<b>Special Subject – Paper I</b> <b>(Any one of the following)</b> a) Business Administration b) Banking & Finance. c) Business Laws & Practices.

	<ul style="list-style-type: none"> <li>d) Co-operation &amp; Rural Development.</li> <li>e) Cost &amp; Works Accounting.</li> <li>f) Business Statistics.</li> <li>g) Business Entrepreneurship.</li> <li>h) Marketing Management.</li> <li>i) Agricultural &amp; Industrial Economics.</li> <li>j) Defense Budgeting, Finance &amp; Management.</li> <li>k) Insurance, Transport &amp; Tourism.</li> <li>l) Computer Programming and Applications.</li> </ul>
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<b>T.Y. B.Com. w.e.f. 2015-16</b>	
<b>Sr. No.</b>	<b>Compulsory / Main Subjects</b>
<b>301</b>	Business Regulatory Framework (Mercantile Law)
<b>302</b>	Advanced Accounting.
<b>303 (A)</b>	Indian & Global Economic Development
	Or
<b>303 (B)</b>	International Economics
<b>304</b>	Auditing & Taxation
<b>305</b>	<b>Special Subject – Paper II</b> <b>(Same special subject offered at S.Y. B.Com.)</b> <ul style="list-style-type: none"> <li>a) Business Administration</li> <li>b) Banking &amp; Finance.</li> <li>c) Business Laws &amp; Practices.</li> <li>d) Co-operation &amp; Rural Development.</li> <li>e) Cost &amp; Works Accounting.</li> <li>f) Business Statistics.</li> <li>g) Business Entrepreneurship.</li> <li>h) Marketing Management.</li> <li>i) Agricultural &amp; Industrial Economics.</li> <li>j) Defense Budgeting, Finance &amp; Management.</li> <li>k) Insurance, Transport &amp; Tourism.</li> <li>l) Computer Programming and Applications.</li> </ul>
<b>306</b>	<b>Special Subject – Paper III</b> <b>(Same special subject offered at S.Y. B.Com.)</b> <ul style="list-style-type: none"> <li>a) Business Administration</li> <li>b) Banking &amp; Finance.</li> <li>c) Business Laws &amp; Practices.</li> <li>d) Co-operation &amp; Rural Development.</li> <li>e) Cost &amp; Works Accounting.</li> <li>f) Business Statistics.</li> <li>g) Business Entrepreneurship.</li> <li>h) Marketing Management.</li> <li>i) Agricultural &amp; Industrial Economics.</li> <li>j) Defense Budgeting, Finance &amp; Management.</li> <li>k) Insurance, Transport &amp; Tourism.</li> <li>l) Computer Programming and Applications.</li> </ul>

**B) Subjects Carrying Practical's**

There will be practical examination for the F.Y.B.Com. for the subject Financial Accounting. There will be practical and practical examinations for the special subjects at S.Y.B.Com. and T.Y.B.Com. levels. There will be Practical for the S.Y.B.Com level Compulsory subject Business Communication & for T.Y.B.Com Auditing & Taxation.

(C) A Student must offer the same Special Subject at T.Y.B.Com. which he has offered at S.Y.B.Com.

(D) In an exceptional cases, a student may change the subject chosen by him at second year during the first term of the third year provided he keeps the additional terms of the new subject at S.Y.B.Com.

**4. EXTERNAL CANDIDATES**

- 1) The student who has registered his name as the external student will appear at the annual examination.
- 2) The result of external student will be declared on the basis of Annual Examination of 80 marks for practical subjects by converting the same out of 100.
- 3) No foreign student shall be allowed to register as an External Student.

**5. MEDIUM OF INSTRUCTION.**

Medium of instruction for B.Com. degree course shall be either Marathi or English except languages.

The Medium of instructions for Business Communication (S.Y.B.Com) shall be English only.

**6. WORKLOAD**

The present norms of workload of lectures, tutorials and practicals per subject in respect of B.Com. Course shall continue.

**7. UNIVERSITY TERMS**

The dates for the commencement and conclusion of the first and the second terms shall be as determined by the University Authorities. The terms can be kept only by duly admitted students. The present relevant ordinances pertaining to grant of terms will be applicable.

**8. VERIFICATION AND REVALUATION**

The candidate may apply for verification and revaluation or result through Principal of the College which will be done by the University as per ordinance framed in that behalf.

**9. EQUIVALENCE AND TRANSITORY PROVISION**

The University will conduct examination of old course for next three academic years from the date of implementation of new course.

The candidate of old course will be given three chances to clear his subjects as per the old course and thereafter he will have to appear for the subjects under new course as per the equivalence given to old course.

## **10. RESTRUCTURING OF COURSES**

This new revised structure shall be made applicable to the colleges implementing 'Restructured Programme' at the undergraduate level from June, 2004. The existing pattern of 'C', 'D', and 'E' Components shall be continued.

The Colleges under the Restructured Programme which has revised their structure in the light of the "2008 Pattern" shall be introduced with effect from academic year 2010-11.

## **11. SETTING OF QUESTION PAPERS**

1. A candidate shall have the option of answering the question in any of the subjects either in Marathi or English except in languages.
2. The question papers shall be framed so as to ensure that no part of the syllabus is left out of study by a student.
3. The question paper shall be balanced in respect of various topics outlined in the syllabus.
4. The question papers shall have combination of long and short answer type question. As far as possible short answer type questions should not exceed 15 to 20 percent.
5. There shall be no overall option in the question paper, instead, there shall be internal options (such as either/ or and three short answers out of five etc.).
6. In case of question paper under the Special Subject (Paper No. III) one question carrying 10 marks will be set on current knowledge in relating subject in the academic year.

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**F.Y. B.Com.**  
**Compulsory Paper**  
**Subject Name -: Financial Accounting.**  
**Course Code -: 102**

**Objectives -:**

1. To impart the knowledge of various accounting concepts
2. To instill the knowledge about accounting procedures, methods and techniques.
3. To acquaint them with practical approach to accounts writing by using software package.

**Term I**

Unit No.	Topic	No. of Lectures
1.	<b>Piecemeal Distribution of Cash</b> Meaning and Introduction, Surplus Capital Method and Maximum Loss Method	12
2.	<b>Amalgamation of Partnership Firms:-</b> Meaning and Introduction, Objectives, Methods of accounting	12
3.	<b>Conversion of a partnership firm into a limited company</b> Meaning and introduction, objectives, effects, methods of calculation of purchase consideration (Net Asset and Net Payment method), accounting procedure in the books of the firm and balance sheet of new company	12
4.	<b>Computerized Accounting Environment</b> Meaning and Introduction, application of accounting software package, Voucher entry through software package.	12
<b>Total</b>		<b>48</b>

**Term II**

Unit No.	Topic	No. of Lectures
5.	<b>Introduction and Relevance of Accounting Standards</b> Overview of Accounting Standards in India-Concept, Need, Scope and Importance. Study of AS- 1, AS- 2, AS- 4 and AS- 9	10
6.	<b>Royalty Accounts [excluding sub-lease]:</b> Royalty, Minimum Rent, Short Workings, Recoupment of Short Working, Lapse of Short Working. Journal Entries and Ledger Accounts in the Books of Landlord and Lessee.	12
7.	<b>Hire Purchase and Installment System:[Excluding H. P. Trading]</b> Basic Concepts and Distinction, Calculation of Interest and Cash Price, Journal Entries And Ledger Accounts in The Books of Purchaser and Seller.	16
8.	<b>Departmental Accounts</b> Meaning and Introduction, Methods and Techniques, Allocation of expenses, Inter Departmental Transfers, Provision for unrealized profits	10
<b>Total</b>		<b>48</b>

**Notes:-**



1. Question Paper for Term and Annual Examination should consist of :  
     Theory Questions: -30%  
     Problems:- 70%
2. There will be minimum two practicals.
3. Accounting practical be conducted in Computer or Commerce Laboratory only.
4. Students are expected to study and practice the application of accounting software packages.
5. Colleges are expected to use only licensed copy of software.
6. Practical examination need to be conducted in the computer laboratory.
7. Each student should be given separate set of transactions for practical examination.
8. For practical examination, internal and external examiner shall be appointed by the college.

<b>Recommended Books</b>
<ol style="list-style-type: none"> <li>1. Financial Accounting: By P. C. Tulsian (Tata McGraw-Hill Publishing Co. Ltd. New Delhi)</li> <li>2. Financial Accounting: By A. Mukharji &amp; M. Hanif (Tata McGraw-Hill Publishing Co. Ltd. New Delhi)</li> <li>3. Financial Accounting: By S.N. Maheshwari &amp; S.K. Maheshwari (Vikas Publishing House Pvt. Ltd)</li> <li>4. Financial Accounting: By Dr. K.N. Jagtap, Dr. S. Zagade &amp; Dr. A.H. Gaikwad (Success Publications, Pune)</li> <li>5. Advanced Accounts: By M.C. Shukla &amp; S.P. Grewal (S.Chand &amp; Co. Ltd. New Delhi)</li> <li>6. Advanced Accountancy: By S.P. Jain &amp; K.N. Narang ( Kalyani Publishers, New Delhi)</li> <li>7. Advanced Accountancy: By R.L.Gupta &amp; M. Radhaswamy (Sultan Chand &amp; Sons, New Delhi)</li> </ol>



**Journals:-**

1. The Chartered Accountant: Journal of the Institute of Chartered Accountants of India.
2. The Accounting World : ICFAI Hyderabad

**F.Y. B.Com.**  
**Compulsory Paper**  
**Subject Name -: Business Economics (Micro)**  
**Course Code -: 103**

**Objectives -:**

1. To expose Students of Commerce to basic micro economic concepts and inculcate an analytical approach to the subject matter.
2. To stimulate the student interest by showing the relevance and use of various economic theories.
3. To apply economic reasoning to problems of business.

**Term I**

Unit No.	Topic	No. of Lectures
<b>1.</b>	<b>INTRODUCTION.</b> 1.1 Meaning, Nature and Scope of Business Economics- (Micro) 1.2 Difference between Micro and Macro Economics. 1.3 Tools for Analysis a. Functional Relationships b. Schedules c. Graphs d. Equations 1.4 Goals of firms a) Economic Goals of Firms 1. Profit Maximization 2. Shareholders Wealth Maximization 3. Management Reward Maximization 4. Growth of the firm 5. Sales maximization 6. Long run survival b) Non-Economic goals 1. Political power, Prestige 2. Social responsibility and welfare 3. Goodwill of employees	<b>12</b>
<b>2.</b>	<b>DEMAND ANALYSIS</b> 2.1 Elasticity of Demand, Types of Elasticity, Price Elasticity, Income Elasticity and Cross Elasticity. 2.2 Consumer Behaviour a) Marginal Utility Approach - Limitations b) Indifference Curve Analysis - Concept - Characteristics - Consumer Equilibrium 2.3 Demand Forecasting and Estimation a) Meaning and objectives of Demand Forecasting b) Methods of Demand Forecasting c) Descriptive Analysis of	<b>20</b>

	<ul style="list-style-type: none"> <li>i) Direct Methods <ul style="list-style-type: none"> <li>1) Consumer Survey</li> <li>2) Expert opinion</li> <li>3) Simulating market situation</li> <li>4) Controlled Market Experiments</li> </ul> </li> <li>ii) Indirect Methods <ul style="list-style-type: none"> <li>1) Simple correlation</li> <li>2) Trend Projections</li> </ul> </li> </ul>	
<b>3.</b>	<p><b>PRODUCTION AND COST ANALYSIS</b></p> <ul style="list-style-type: none"> <li>3.1 Production Function – Meaning</li> <li>3.2 Law of Variable Proportions - The Three Stages</li> <li>3.3 Law of Returns to Scale - The Three Stages</li> <li>3.4 Economies and Diseconomies of Scale – Internal and External</li> <li>3.5 Cost Analysis – Types of Costs <ul style="list-style-type: none"> <li>a) Types of Costs <ul style="list-style-type: none"> <li>1) Total cost</li> <li>2) Average Cost</li> <li>3) Marginal Cost</li> <li>4) Opportunity cost</li> </ul> </li> <li>b) Behaviour of Cost Curves <ul style="list-style-type: none"> <li>1) In the Short Run</li> <li>2) In the Long Run</li> </ul> </li> </ul> </li> </ul>	<b>16</b>
<b>Total</b>		<b>48</b>

### Term II

Unit No.	Topic	No. of Lectures
<b>4.</b>	<p><b>REVENUE BEHAVIOUR</b></p> <ul style="list-style-type: none"> <li>4.1 Meaning and Importance of Revenue Concepts</li> <li>4.2 Total Revenue (TR), Average Revenue (AR) Marginal Revenue (MR).</li> <li>4.3 Relationship between Total Revenue, Average Revenue and Marginal Revenue</li> </ul>	<b>8</b>
<b>5.</b>	<p><b>PRICING UNDER VARIOUS MARKET CONDITIONS</b></p> <ul style="list-style-type: none"> <li>5.1 Perfect Competition – Features and equilibrium</li> <li>5.2 Monopoly – Features and equilibrium, Price Discrimination</li> <li>5.3 Monopolistic competition - Features and equilibrium</li> <li>5.4 Oligopoly – Features</li> </ul>	<b>20</b>
<b>6.</b>	<p><b>FACTOR PRICING</b></p> <ul style="list-style-type: none"> <li>6.1 Marginal Productivity theory of Distribution.</li> <li>6.2 Rent <ul style="list-style-type: none"> <li>a) Theories of Rent <ul style="list-style-type: none"> <li>i) Ricardian Theory of Rent</li> <li>ii) Modern Theory of Rent</li> </ul> </li> </ul> </li> </ul>	<b>20</b>

	<p>6.3 WAGES -</p> <p style="padding-left: 20px;">i) Backward sloping Supply curve of Labour.</p> <p style="padding-left: 20px;">ii) Collective Bargaining &amp; Trade Unions</p> <p>6.4 INTEREST -</p> <p style="padding-left: 20px;">a) Theories of Interest –</p> <p style="padding-left: 40px;">i) Loanable Fund Theory of Interest</p> <p style="padding-left: 40px;">ii) Keynes Liquidity Preference Theory of Interest</p> <p>6.5 PROFIT -</p> <p style="padding-left: 20px;">a) Theories of Profit –</p> <p style="padding-left: 40px;">i) Dynamic Theory of Profits</p> <p style="padding-left: 40px;">ii) Innovation Theory of Profit</p> <p style="padding-left: 40px;">iii) Risk and Uncertainty Theory of Profit</p>	
<b>Total</b>		<b>48</b>

<b>Recommended Books</b>	
1.	Economics – Samuelson P. A. and Nordhaus W. D. TataMcGraw Hill Publishing Co. Ltd. N.Delhi.
2.	A text Book of Economic Theory – Stonier A. W. and Hague D. C. Longman Green and Co. London
3.	Business Economics – V. G. Mankar, Macmillan India Ltd. N. Delhi.
4.	Vyavasaik Arth Shastra (Sukshm) Dr. T. G. Gite, Atharv Publication. Pune
5.	Modern Micro Economics – Theory and Applications H.L. Ahujna S. Chand and Co Ltd. N Delhi.
6.	Business Economics – Dr. Girija Shankar – Atharv Publication, Pune.
7.	Principals of Economics – N.Gregory Mankiw 6 <sup>th</sup> edition 2012 Cengage learning india pvt ltd Delhi
8.	Understanding Microeconomics- Robert L. Helibroner and Lester C. Thurow. Prentice Hall International Inc. London.
9.	Micro Economic Theory An Analytical Approach – J M Joshi and R. Joshi Wishwa Prakashan (Division of Wiley Eastern Limited) N. Delhi.
10.	Business & Managerial Economics (in the global Context) Sampat Mukherjee. New Central Book Agency, Calcutta.
11.	Micro Economics Theory and Application D.N.Dwivedi Second Edition PEARSON.

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Business Mathematics and Statistics**  
**Course Code -: 104 (A)**

**Objectives -:**

1. To prepare for competitive examinations
2. To understand the concept of Simple interest, compound interest and the concept of EMI.
3. To understand the concept of shares and to calculate Dividend
4. To understand the concept of population and sample.
5. To use frequency distribution to make decision.
6. To understand and to calculate various types of averages and variations.
7. To understand the concept and application of profit and loss in business.
8. To solve LPP to maximize the profit and to minimize the cost.
9. To use correlation and regression analysis to estimate the relationship between two variables.
10. To understand the concept and techniques of different types of index numbers.

**FIRST TRM**

**Medium for this subject shall be ENGLISH only**

<b>Unit 1.</b>	<b>Pre-requisites ( For objective type questions only)</b>	<b>(10)</b>
	<ol style="list-style-type: none"><li>1. Natural Numbers and Integers</li><li>2. H.C.F and L.C.M.</li><li>3. Fractions- addition, subtraction multiplication and division of two or more fractions</li><li>4. Laws of Indices</li><li>5. Ratio and Percentage</li><li>6. Proportion and partnership</li></ol>	
<b>Unit 2.</b>	<b>Interest</b>	<b>(08)</b>
	<ol style="list-style-type: none"><li>1. Simple Interest</li><li>2. Compound interest (nominal and effective rate of interest )</li><li>3. Equated Monthly Installments (EMI) (Reducing and flat rate of interest)</li><li>4. Examples</li></ol>	
<b>Unit 3.</b>	<b>Shares and dividends</b>	<b>(06)</b>
	<ol style="list-style-type: none"><li>1. Concept of Shares, face value, market value, Net Asset Value</li><li>2. Equity Shares and Preference shares</li><li>3. Dividend</li><li>4. Bonus Shares</li><li>5. Examples</li></ol>	
		<b>Total [24]</b>

**Unit 4. Population and Sample (08)**

1. Definition and concept of Statistics
2. Scope of Statistics in Economics, Management Science and Industry
3. Concept of Population and Sample
4. Methods of Sampling: Simple Random Sampling and Stratified Random Sampling (Description of procedures only)

**Unit 5. Measures of central tendency (16)**

1. Variables Qualitative and Quantitative, Raw data, Classification of data,
2. Frequency distribution, cumulative frequency distribution,
3. Histogram (finding mode graphically) Ogive curves and its uses.
4. Measures of central tendency: Mean, Median for ungrouped and Grouped data.
5. Examples

----- **Total [48]**

**SECOND TERM**

**Unit 6. Profit and Loss (12)**

1. Concept of Cost Price, Marked Price and Selling Price
2. Trade Discount and Cash Discount
3. Commission and Brokerage
4. Examples

**Unit 7. Linear Programming Problems ( For two Variables only) (12)**

1. Definition and terms in a L.L.P.
2. Formulation of L.L.P.
3. Solution by Graphical Method
4. Examples

----- **Total [24]**

**Unit 8. Measures of dispersion (08)**

1. Concept of Dispersion
2. Measures of Dispersion – Range, Variance and Standard Deviation (S.D.) for Grouped and ungrouped data
3. Measures of relative dispersion- Coefficient of range and coefficient of Variation
4. Examples

**Unit 9. Correlation and Regression (08)**

1. Concept of Bivariate data, correlation using scatter diagram
2. Karl Pearson’s Coefficient correlation for ungrouped data
3. Spearman’s Rank correlation coefficient
4. Concept of regression, lines of regression
5. Regression as prediction Model
6. Examples

**Unit 10. Index number (08)**

1. Concept of Index Number

2. Construction of Price Index Number
3. Laspeyre's, Paasche's and Fisher's Method
4. Family Budget and Aggregate Expenditure Method
5. Concept of – Cost of Living /Consumer Price Index Number, SENSEX and NIFTY
6. Examples

----- **Total [24]**

**Grand Total [48]**

**Recommended Books:**

1. Practical Business Mathematics by S.A.Bari (New Literature Publishing Company)
2. Business Mathematics by V.K.Kapoor (Sultan Chand And Sons)
3. Fundamentals of Statistics by S.C.Gupta (Himalaya Publishing House)
4. Basic Statistics by B.L.Agrawal (New Age International Publishers)
5. Statistical Methods by S.P.Gupta (Sultan Chand And Sons)

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Computer Fundamentals**  
**Course Code -: 104 (B)**

**Objective:**

1. To make the students familiar with Computer environment.
2. To make the students familiar with the basics of Operating System and business communication tools.
3. To make the students familiar with basics of Network, Internet and related concepts.
4. To make awareness among students about applications of Internet in Commerce.
5. To enable students to develop their own web site.

**Term - I**

Unit No.	Topic	Lectures
<b>1.</b>	<b>Introduction to Computer Fundamentals</b>	[10]
	Introduction to Computer Computer System Hardware Computer Memory Input and Output Devices Interaction between User and Computer Introduction to Free and Open Source Software Definition of Computer Virus, Types of Viruses, Use of Antivirus software	
<b>2.</b>	<b>Basics of Operating System</b>	[12]
	Definition of Operating System Objectives, types, and functions of Operating Systems Working with Windows Operating System: Introduction, The Desktop, Structure of Windows, Windows Explorer, File and Folder Operations, The Search, The Recycle Bin, Configuring the Screen, Adding or Removing New Programs using Control Panel, Applications in windows (Paint, Notepad, WordPad, Calculator)	
<b>3.</b>	<b>Introduction to Business Communication Tools</b>	[12]
	<b>MS-Word:</b> Introduction, Starting MS-Word, MS-Word Screen and its Components, Elementary Working with MS-Word <b>MS-Excel:</b> Introduction, Starting MS-Excel, Basics of Spreadsheet, MS-Excel Screen and Its Components, Elementary Working with MS-Excel <b>MS-Powerpoint:</b> Introduction, Starting MS-PowerPoint, Basics of PowerPoint, MS-PowerPoint Screen and Its Components, Elementary Working with MS-PowerPoint	
<b>4.</b>	<b>Introduction to Computer Network</b>	[06]
	Introduction Importance of Networking Computer Network (LAN, WAN, MAN) Network Components (Hub, Switch, Bridge, Gateway, Router, Modem) Network Topology, Wireless Networks	
<b>5.</b>	<b>Use of Computer in Commerce</b>	[08]



	<p>Data Processing, Files and Records, File Organization (Sequential, Direct/Random, Index )</p> <p>Computer Applications in Business – Need and Scope</p> <p>Computer Applications in various fields of Commerce: Personnel Administration, Accounting, Cost and Budgetary Management, Purchasing, Banking, Insurance and Stock-broking, e-governance</p> <p>Introduction to E-Commerce, Evolution of E-Commerce, Role of E-Commerce, E-Commerce Framework, E-Commerce Categories</p>	
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### Term - II

Unit No.	Topic	Lectures
1.	<p><b>Internet and Internet application</b></p> <p>Introduction, Internet evolution</p> <p>Working of Internet, Use of Internet</p> <p>Overview of World Wide Web (Web Server and Client)</p> <p>Introduction to Search engine and Searching the Web</p> <p>Downloading files</p> <p>Introduction to Web Browsers</p> <p>Working with E-mail (creation and use of the same)</p>	[08]
2.	<p><b>Electronic Data Interchange</b></p> <p>Introduction to EDI</p> <p>EDI Architecture</p> <p>Financial EDI</p> <p>Overview of the technology involved in EDI</p>	[04]
3.	<p><b>Electronic Payment System</b></p> <p>Introduction to EPS</p> <p>Introduction to EFT (Electronic Fund Transfer)</p> <p>Introduction to SET (Secure Electronic Transaction)</p> <p>Business requirement addressed by SET</p> <p>Introduction to Digital Signature and Digital Certificates , Stages of SET</p> <p>Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card</p>	[08]
4	<p><b>Introduction to HTML.</b></p> <p>Introduction to HTML. Working of HTML</p> <p>Creating and loading HTML page, tags</p> <p>Structure of on HTML, Document, Stand Alone Tags</p> <p>Formatting text, Adding Images</p> <p>Creating hyper Links, Tables</p> <p>Sending E-mails through Web Page</p> <p>Sample web pages</p>	[10]
5.	<p><b>Introduction To Web page Design</b></p> <p>Introduction to Web design, Types of Web Pages</p> <p>Web design Pyramid</p> <p>Building web sites</p>	[07]

	Web development process model	
<b>6.</b>	<b>Designing The web pages</b> Page size, Page type, Page margin, Entrance page Exit page, Graphics in Webpage design Animation Effect, Sound Effect Color Effect Uploading the web site (Web space, Domain Name, Hosting the web site)	<b>[08]</b>
<b>7.</b>	<b>Internet Security</b> Security, Privacy Ethical Issues & Cyber Law	<b>[03]</b>

### Reference Books

1. Computer Fundamentals by: Anita Goel, Pearson Education India ISBN: 9788131742136
2. Connecting with Computer Science, by Greg Anderson, David Ferro, Robert Hilton, Course Technology, Cengage Learning, ISBN:9781439080351
3. Fundamentals of Computer : For undergraduate courses in commerce and management, IITL Education Solutions Limited, Pearson Education, ISBN:9788131733349
4. Introduction to Computer Science, 2/e, IITL Education Solutions Limited, Pearson Education, ISBN:9788131760307
5. Frontiers of Electronic Commerce, Ravi Kalakota, Andrew B. Whinston, Pearson Education, ISBN:9788177583922
6. Internet: The Complete Reference, Margaret Levine Young, Tata McGraw Hill Education Private Limited, ISBN: 9780070486997
7. Murach's HTML, XHTML and CSS: Training & Reference, Anne Boehm, Shroff/Murachs Publication, ISBN-9789350230954
8. On the Way to the Web: The Secret History of the Internet and Its Founders, A. Banks, Apress Publication, ISBN: 9781430208693
9. Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remingto, Arthur L. Norberg, MIT Press (MA), ISBN:9780262140904

### Guidelines for Examination:

1. Term End Exam (20 Marks):  
To be conducted by college as per rules provided by University of Pune.
2. Annual Exam (80 Marks):  
To be conducted by University of Pune at the end of the academic year.  
Passing marks for the course are 40 (Out of which **minimum 32** marks are compulsory in Annual Examination).

**F.Y. B.Com.**

**Optional Paper**

**Subject Name :- Organizational Skill Development.**

**Course Code :- 105 – a.**

**Objective:**

1. To orient the students towards the concept of Organization and Modern Office.
2. To acquaint the students with the role of and Functions of Office Manager.
3. To develop the insights regarding Organizational Skills for Office Managers.
4. To know the functioning of Modern office appliances equipments and e- format records

**Term I**

<b>Unit No.</b>	<b>Topic</b>	<b>No. of Lectures</b>
<b>1.</b>	<b>Modern Office</b> 1.1 Introduction, Definition, Characteristics, Importance and Functions 1.2 Traditional and Modern Concepts of Office 1.3 Office Location Meaning, Objectives , Principles of Office Location Office Layout – Meaning , Objectives , Principles and Layout ,Modular and Structured Furniture 1.4 Factors of Good Ambience Office Lighting, ventilation. Temperature, Sanitation, Interior Decoration, Noise and Cleanliness.	<b>12</b>
<b>2.</b>	<b>Office Organization</b> 1.1 Definition, Importance of office organization, 1.2 Principles, Steps. 1.3 Types of Organization 1.4 Concept and Functions of Office Administrator.	<b>12</b>
<b>3.</b>	<b>Office Manager and Organizational Skills</b> 3.1 Office Manager – Role, duties and responsibilities 3.2 Qualification, Qualities and skills of an office manager 3.3 Time Management –Definition, Need, Principles, advantages and Disadvantages, Time Management techniques. 3.4 Goal Setting-Concept of goal-setting - Importance of goals, SMART(Specific, Measurable, Achievable, Realistic, Time-bound) goals , Do's and Don'ts about goals.	<b>12</b>
<b>4.</b>	<b>Office services</b> 4.1 Mail Routine , Courier Services its need and Importance 4.2 Office Forms - objectives, advantages and types of office forms E-forms – advantages. 4.3 Organizational Web Page – Contents, advantages, Internet/Web basedapplications of office activities. 4.4 Office Stationary and Supplies - Importance of stationary, Essentials of	<b>12</b>

	a good system of regulating stationary, purchases, storage, Record of stationary,	
<b>Total</b>		<b>48</b>

### Term II

Unit No.	Topic	No. of Lectures
<b>5.</b>	<b>Office Records Management</b> 5.1 Introduction - Need - Objectives - Kinds of Records. 5.2 Organization of records department. 5.3 Classifying and Indexing of Records and Files. Principles - Retention and disposition of records. 5.4 Digitalization of Records: Meaning, advantages, process, utility and feasibility.	<b>12</b>
<b>6.</b>	<b>Office Communications</b> 6.1 Meaning and Elements of Office Communications, 6.2 Channels of Communication – Internal and External 6.3 Significance and barriers to effective communications 6.4 Recent trends in modern communications such as Fax - E-Mail, Internet, Intranet, www(World Wide Web ),Tele conferencing, Video Conferencing as means of Communication	<b>12</b>
<b>7.</b>	<b>Public Relations :</b> 7.1 Definition, nature, Scope of PR with customers, investors , employees, government offices and others 7.2 Objectives, importance and functions 7.3 Role of Public Relation Officer in Modern Office 7.4 – Modern methods of Public Relations	<b>12</b>
<b>8</b>	<b>Office Automation</b> 8.1 Office Automation – meaning, scope, feasibility, and advantages 8.2 Different types of modern appliances and machines used in Offices. 8.3 Computerization of office activities - LAN – WAN 8.4 Accounting Packages, Payroll Accounting, Inventory statements, - Vouchers –Invoices - Salary - Maintenance of records and Accounting Books and preparation of financial Report, Leave accounting, Attendance.	<b>12</b>
<b>Total</b>		<b>48</b>

### **Recommended Books**

1. Office Organization and Management – By S. P. Arora
2. Office Methods - By M. L. Basu
3. Office Automation – By G. R. Terry
4. Office Management & Control – By G. R. Terry
5. Office Management – By P. K. Ghosh
6. Files and Record Management By Pophan
7. A text book of Office Management By William II & Leffingwell & Robinson
8. Office Administration and Management – by Dr. Khorshed Madon. and Dr. Homai M. Dowell, Vikas Publishing House , Delhi

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Banking and Finance**  
**[Fundamentals of Banking]**  
**Course Code -: 105 – b.**

**Objective:**

1. To acquaint the students with the fundamentals of banking.
2. To develop the capability of students for knowing banking concepts and operations.
3. To make the students aware of banking business and practices.
4. To give thorough knowledge of banking operations.
5. To enlighten the students regarding the new concepts introduced in the banking system.

**Term I**

Unit No.	Topic	No. of Lectures
<b>1.</b>	<b>Evolution of banking</b> 1.1 Origin, Meaning and Definition of 'Bank' 1.2 Evolution of banking- Europe, USA & Asia 1.3 Evolution of banking in India. 1.4 Structure of Indian Banking System	<b>06</b>
<b>2.</b>	<b>Functions of Bank</b> <b>2.1 Primary functions:</b> A) Accepting deposits: Demand deposits: Current and Savings; No Frills Account, Time deposits-Recurring and Fixed deposits, Flexi Deposits (Auto Sweep) B) Granting Loans and Advances- Term Loan, Short term credit, Overdraft, Cash Credit, Purchasing, Discounting of bills, <b>2.2 Secondary functions:</b> A) Agency Functions- Payment and Collection of Cheques, Bills and Promissory notes, Execution of standing instructions, Acting as a Trustee, Executor. B) General Utility Functions: Safe Custody, Safe deposit vaults, Remittances of funds, Pension Payments, Acting as a dealer in foreign exchange.	<b>14</b>
<b>3.</b>	<b>Procedure for opening and operating of deposit account</b> 3.1 Procedure for Opening of Deposit Account: Know Your Customer- Needs and Norms (KYC Norms), Application form, Introduction, Proof of residence, Specimen signature and Nomination: Their Importance 3.2 Procedure for Operating Deposit Account: Pay-in-slips, Withdrawal slips, Issue of pass book, (Current Savings or Recurring deposits), Issue of Cheque book, Issue of fixed deposit receipt, Premature encashment of fixed deposits and loan against fixed deposit. Recurring deposits: Premature encashment and loan against recurring deposit. 3.3 a) Closure of accounts b) Transfer of accounts to other branches/Banks 3.4 Types of account holders a) Individual account holders- Single or joint, Illiterate, Minor, Married	<b>14</b>

	woman, Pardahnashin woman, Non resident accounts b) Institutional account holders- Sole proprietorship, Partnership firm, Joint stock company, Hindu undivided family, Clubs, Associations and Societies and Trusts.	
<b>4.</b>	<b>Methods of Remittances</b> 4.1 Demand drafts, bankers' Cheques and Truncated Cheques 4.2 Mail transfer, Telegraphic transfer, 4.3 Electronic Funds Transfer- RTGS, NEFT and SWIFT	<b>14</b>
<b>Total</b>		<b>48</b>

### Term II

Unit No.	Topic	No. of Lectures
<b>5.</b>	<b>Lending principles, Credit Creation and Balance Sheet of a bank</b> 5.1 Safety, Liquidity, Profitability, Diversification of risks Conflict between liquidity and profitability 5.2 Multiple Credit Creation: Process and Limitations 5.3 Balance sheet of a commercial bank.	<b>16</b>
<b>6.</b>	<b>Negotiable Instruments</b> 6.1 Definition, meaning and characteristics of Promissory note, Bill of Exchange and Cheque 6.2 Types of Cheques- Bearer, Order and Crossed 6.3 Types of Crossing- General and Special.	<b>16</b>
<b>7.</b>	<b>Endorsement</b> 7.1 Definition and meaning of endorsement 7.2 Types of endorsement- Blank, Full or Special, Restrictive, Partial, Conditional, Sans Recourse, Facultative.	<b>08</b>
<b>8</b>	<b>Technology in Banking</b> 8.1 Need and importance of technology in banking 8.2 E-Banking: ATM, Credit card, Debit card, Tele Banking, Mobile Banking, Net Banking, SWIFT (Society for Worldwide Inter-bank Financial Telecommunication) 8.3 Concept and benefits of Core Banking Solution.	<b>08</b>
<b>Total</b>		<b>48</b>

### **Recommended Books**

1. Practice and Law of Banking- G.S.Gill
2. Banking: Law and Practice- P.N. Varshney
3. Banking: Theory and practice- E.Gordon, K. Talraj
4. Banking: Law and practice in India- Tannan
5. Banking: Law and practice in India- Maheshwari
6. Fundamentals of Banking- Dr. G.V.Kayandepatil, Prof. B.R.Sangle, Dr. G.T.Sangle, Prof. N.C.Pawar
7. Banking: Law and Practice- Prof. Mogle
8. Banking and financial system - Vasant Desai
9. Banking theory and practice- K.C.Shekhar
10. Fundamentals of banking'- Dr. R.S.S.Swami
11. Annual Report on trends and progress of banking in India- R.B.I.
12. Toor N. S., Handbook of Banking Information



**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Defense Organization and Management in India**  
**Course Code -: 105 – d.**

**Objective:**

1. To understand the role of Armed Forces for maintaining national security of the country.
2. To understand Higher Defense Mechanism, Role of Intelligence and Management Technique in Decision making at Strategic & Tactical Level

**Term I**

Unit No.	Topic	No. of Lectures
<b>1.</b>	<b>Principles of Defense Organization</b> 1.1 Reconstruction of Indian Armed Forces since 1947 1.1.1 Development of the Army after Independence 1.1.2 Development of the Navy after Independence 1.1.3 Development of the Air Force after Independence	<b>12</b>
<b>2.</b>	<b>Higher Defense Organization in India</b> 2.1. Powers of the President in relation to the Armed Forces 2.2. Defense Committee of the Cabinet. 2.3. Ministry of Defense – its organization & function 2.4. National Security Council	<b>12</b>
<b>3.</b>	<b>Defense Mechanism of the Indian Armed Forces</b> 3.1 Chief of Staff Committee 3.2 Organization of Army, Naval & Air Headquarters. 3.3 Organization of Army, Naval & Air Commands.	<b>12</b>
<b>4.</b>	<b>Second Line of Defense</b> 4.1. Border Security Force 4.2. Coast Guard 4.3. Territorial Army 4.4. Home Guard 4.5. Civil Defense 4.6. National Cadet Corps (N.C.C) 4.7. Central Reserve Police Force 4.8. State Reserve Police Force	<b>12</b>
<b>Total</b>		<b>48</b>

**Term II**

Unit No.	Topic	No. of Lectures
<b>5.</b>	<b>Intelligence</b> 5.1. History & Types of Intelligence 5.2. Process & Principles of Intelligence 5.3. Devices for Collecting Intelligence 5.4. Role of Intelligence 5.5. Counter Intelligence 5.6. Indian Intelligence Organization	<b>12</b>

<b>6.</b>	The Combat Branches 6.1. Infantry 6.1.1. Characteristic, Role & Limitations. 6.1.2. Division & Battalion Organization. 6.2. Armoured Crops 6.2.1. Characteristics, Role & Limitations 6.3. Supporting Arms 6.3.1. Artillery – Characteristics, Role & Limitations 6.3.2. Engineers - Characteristics, Role & Limitations 6.3.3. Signal Corps - Characteristics, Role & Limitations means of signals	<b>12</b>
<b>7.</b>	The Administrative Services 7.1 Army Service Crops 7.2 Army Ordnance Crops 7.3 Electrical & Medical Engineers. 7.4 Army Medical Crops – its role in Peace & War time	<b>12</b>
<b>8</b>	Indian Navy & Indian Air Force 8.1. Characteristic, Role & Limitations Navy & Air Force 8.2. Various Types of Battle Ships in Indian Navy 8.3. Various Types of Aircrafts in Indian Air Force	<b>12</b>
<b>Total</b>		<b>48</b>

<b>Recommended Books</b>	
<ol style="list-style-type: none"> <li>1. Ron Mathews – “Defence Production in India” ABC – New Delhi</li> <li>2. Raju G. C. Thomas – “The Defence of India – A Budgetary perspective of strategy &amp; politics”, Mac Millan Publication, New Delhi – 1978</li> <li>3. Sam-C-Sarkesian – “The Military Industrial Complex – A Reassessment”, Sage Publication, 1972</li> <li>4. Maj. Gen. Pratap Narain (Retd.) “India’s Arms Bazaar” Shilpa Publication, New Delhi – 1998</li> <li>5. Y. Lakshmi, “Trends in India’s Defence Expenditure” ABC, New Delhi 1998.</li> <li>6. Lt. Gen. R.K. Jasbir Singh, “India’s Defence Year Books”, Natraj Publication, Dehradun 1999</li> <li>7. Annual Report, Ministry of Defence, Government of India</li> <li>8. Venkateshwaram A.L. – “Defence organisation in India”</li> <li>9. Nagendra Singh – “Defence Mechanism of Modern State”.</li> <li>10. Lt. Col. Abhyankar M. G. – “Defence Principle &amp; Organisation”.</li> <li>11. U. C. Jain, Jeevan Nair – “Indian Defence &amp; Security”, Pointer Publishers, Jaipur, 2000</li> <li>12. D.C.Pathak, “Intelligence: A Security Weapon”, Manas Publication, New Delhi, 2003</li> <li>13. Stephen Peter Rosen, “Societies &amp; Military Power – India &amp; its Armies”, Oxford University Press, New Delhi, 1996</li> <li>14. Maj. K.C. Praval, “Indian Army after Independence”, Lancer International, New Delhi, 1990</li> <li>15. H. B. Mishra, “Defence Programmes of India” – Author Press – New Delhi – 2000</li> <li>16. Maj. Udaya Chandar, “The Art of Military Leadership”, Jaico Publishing House, Mumbai - 1979</li> </ol>	

**F.Y. B.Com.**  
**Optional Paper**

**Subject Name -: Co-operation**

**Course Code -: 105 – e.**

**Objectives:**

1. To acquaint the students with the concept of co-operation and its movement.
2. To introduce the scope of Co-operation.
3. To make students build their career in the field of Co-operation and Rural Development.

**Term I**

Unit No.	Topic	No. of Lectures
<b>1</b>	<b>Concept of Co-operation-</b> <ul style="list-style-type: none"> <li>➤ Meaning &amp; Definitions</li> <li>➤ Objectives</li> <li>➤ Nature and Scope of Co-operation.</li> </ul>	<b>12</b>
<b>2</b>	<b>Principles of Co-operation- Evaluation of Co-operative principles and modifications there in from time to time.</b> <ul style="list-style-type: none"> <li>➤ International Co-operative Alliance (I.C.A) Committee-1937</li> <li>➤ International Co-operative Alliance (I.C.A.) Commission-1966</li> <li>➤ International Co-operative Alliance (I.C.A.) Commission-1995</li> </ul>	<b>12</b>
<b>3</b>	<b>History of Indian Co-operative Movement – Origin of Co-operative movement in India.</b> <ul style="list-style-type: none"> <li>➤ Sir Fedrick Nicholson Report 1904</li> <li>➤ Maclagen Committee Report 1912</li> <li>➤ Gorewala Committee Report 1954</li> <li>➤ Vaidyanathan Committee Report 2005</li> </ul>	<b>12</b>
<b>4</b>	<b>Contribution to the development of Co-operative Movement in India of:</b> <ul style="list-style-type: none"> <li>➤ Dr. Dhananjay Gadgil</li> <li>➤ Padmashri. Vaikuntbhai Mehta</li> <li>➤ Padmashri. Vitthalrao Vikhe Patil</li> <li>➤ Dr. Verghese Kurien</li> <li>➤ Karmaveer Bhausahab Hiray</li> </ul>	<b>12</b>
<b>Total</b>		<b>48</b>

**Term II**

Unit No.	Topic	No. of Lectures
<b>5</b>	<b>Different Types of Co-operative:</b> <ul style="list-style-type: none"> <li>➤ Rural Co-operative and Urban Co-operative</li> <li>➤ Agriculture Co-operative and Non Agriculture Co-operative.</li> <li>➤ Credit Co-operative and Non Credit Co-operative.</li> </ul>	<b>12</b>

	<ul style="list-style-type: none"> <li>➤ Weaker Sections Co-operatives.</li> <li>➤ Federation of Co-operatives.</li> </ul>	
<b>6</b>	<b>Government and Co-operative movement:</b> <ul style="list-style-type: none"> <li>➤ Role of Central Government</li> <li>➤ Role of State Government</li> </ul>	<b>12</b>
<b>7</b>	<b>Achievement of Co-operative movement:</b> <ul style="list-style-type: none"> <li>➤ Strength and Weakness</li> <li>➤ Future Trends of Co-operative Movement in India.</li> </ul>	<b>12</b>
<b>8</b>	<b>Co-operative Education and Training:</b> <ul style="list-style-type: none"> <li>➤ Objectives of Co-operative Education and Training.</li> <li>➤ Training arrangement in India.</li> <li>➤ Evaluation of education and training programmes.</li> <li>➤ Problems and suggestions.</li> </ul>	<b>12</b>
<b>Total</b>		<b>48</b>

<b>Recommended Books</b>	
1.	Co-operation- Principles and Practice- Dr. D.G. Karve
2.	Co-operation in India- Dr. B.S. Mathur
3.	Theory, History and Practice of Co-operation- Dr. R.D. Beddy
4.	Co-operation in India- Dr. C. B. Memoriya and R.D. Saxena
5.	Theory and Practice of Co-operation in India and Abroad- Prof. R.K. Kulkarni
6.	Bhartiya Sahkari Chadvad- Tatve va Vyavhar ( Marathi )- Prof. Jagdish Killol; Prof. Arvind Bondre; Prof. A. C. Bhavsar
7.	Sahkari Chalval 1904-2004 (Marathi) – Prof. K. L. Fale

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Managerial Economics**  
**Course Code -: 105 – f.**

**Objectives:**

1. To enable students of Commerce to apply economic theory and analysis, practices of business firms.
2. To use tools and techniques of economic analysis to develop managerial decision making
3. To apply economic analysis in the formulation of business policies.

**Term I**

Unit No.	Topic	No. of Lectures
<b>1</b>	<b>INTRODUCTION</b> 1.1 Definition, Nature & Scope and Characteristics of Managerial Economics. 1.2 Theories of the Firm 1.3 Objectives of the Firm – a. Profit Maximization b. Security Objective c. Profit Satisfying Objective d. Sales maximization e. Utility Maximization f. Growth Maximization	<b>13</b>
<b>2</b>	<b>DEMAND ANALYSIS</b> 2.1 Law of Demand 2.2 Determinants of Demand 2.3 Elasticity of Demand – Concept and Measurement of – 2.3.1 Price Elasticity of Demand 2.3.2 Income Elasticity of Demand 2.3.3 Cross Elasticity of Demand 2.4 Importance of Elasticity of Demand in business decision making. 2.5 Business or Economic Forecasting - 2.5.1 Objectives 2.5.2 Methods of Business Forecasting 2.6 Theory of Supply	<b>20</b>
<b>3</b>	<b>PRODUCTION AND COST ANALYSIS</b> 3.1 Production Function –Meaning & Nature 3.2 Law of Variable-the three stages. 3.3 Law of Returns to scale - the three stages. 3.4 Cost Analysis – 3.4.1 In the short run 3.4.3 In the long run	<b>15</b>
<b>Total</b>		<b>48</b>

## Term II

Unit No.	Topic	No. of Lectures
<b>4</b>	<b>PRICING AND INVESTMENT DECISIONS</b> 4.1 Pricing Practices -Objectives 4.2 Investment Decisions – 4.2.1 Concept and Types – a. For Expansion b. For Replacement c. For Modernization d. For Diversification e. For Research and Development. 4.2.2 Aids to Investment Decisions – a. Capital Budgeting – Meaning and Usefulness. 4.2.3 Methods of Investment Decision – Concept and Descriptive analysis of – a. Payback period. b. Average Rate of Return	<b>20</b>
<b>5</b>	<b>COST – BENEFIT ANALYSIS</b> 5.1 Meaning 5.2 Use 5.3 Limitations	<b>13</b>
<b>6</b>	<b>MACRO ECONOMIC ENVIRONMENT</b> 6.1 Business Trends in India – 6.2 Overview of Economic Reforms and Business. 6.3 Role of Multinational Corporations (MNCs) 6.4 Acquisitions and Mergers	<b>15</b>
<b>Total</b>		<b>48</b>

### Recommended Books

1. Dean Joel – managerial Economics. Prentice Hill India Pvt. Ltd. New Delhi.
2. Gupta G.S. –Managerial Economics. Tata Mcgrew Hill, New Delhi.
3. Mithani D.M. – Managerial Economics Theory and Applications. Himalaya Publishing House, N. Delhi.
4. Mmankar V.G. –Business Economics, Macmillan India Ltd. N. Delhi.
5. Varshney and Maheshwari – Managerial Economics.Sultan Chand and sons, N. Delhi.
6. Dr. T. G. Gite - Vyavasaik Arthshstra (Sukshma) Atharve Publication, Pune.
7. Salvatore Dominick – Managerial Economics in a Global Economy. Mcgraw Hill N. York.
8. Dr.Girija Shankar: Micro Economics – Atharva Publication.
9. H. Craig Peterson, W. Cris Lewis – Managerial Economics. Prentice Hill of India Ltd. New Delhi.
10. Dwivedi D. N. Managerial Economics; Tata Mcgrew Hill, New Delhi

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Essentials of E-Commerce**  
**Course Code -: 106 – a.**

**Objective:**

To make a student familiar with the mechanism of conducting business transactions through electronic media. Learning Outcomes: After completing this course, a student is expected to be able to

- explain various components of e-commerce,
- understand the dynamics of e-commerce,
- appreciate the Internet technology and its utility in commercial activities,
- understand the methodology of online business dealings using e-commerce infrastructure.

**Term I**

Unit No.	Topic	No. of Lectures
1.	<b>Overview of Electronic Commerce (EC):</b> Concept, features, and functions of e-commerce, e-commerce practices v/s traditional practices, scope and limitations of e-commerce.	10
2.	<b>Fundamental of e-commerce:</b> Definition and types of e-commerce: B2B, B2C, C2C, and P2P, B2B service provider, e-distributor, procurement and just-in-time delivery.	12
3.	<b>Infrastructure:</b> Internet and its role in e-commerce, procedure of registering Internet domain, establishing connectivity to Internet, tools and services of Internet.	10
4.	<b>E-Payment:</b> Transactions through Internet, requirements of e-payment systems, functioning of debit and credit cards, pre and post payment services.	06
5.	<b>Electronic Data Interchange:</b> Evolution, uses, Benefits, Working of EDI, EDI Standards (includes variable length EDI standards), Cost Benefit Analysis of EDI, Electronic Trading Networks, EDI Components, File Types, EDI Services, EDI Software	10
<b>Total</b>		<b>48</b>

**Term II**

Unit No.	Topic	No. of Lectures
6.	<b>Digital economy:</b> Major characteristics, economic rules, impact on trading and intermediaries, impact on business processes and functional areas in banking, financial and insurance organizations.	08

7.	<b>E-Marketing:</b> Market place v/s Market space, impact of e-commerce on market, marketing issues in e-marketing, direct marketing, one-to-one marketing.	08
8.	<b>E-Finance:</b> Areas of e-finance, e-banking, traditional v/s e-banking, trading v/s e-trading, importance and advantages of e-trading, operational aspects of e-trading.	08
9.	<b>E-Ticketing:</b> Online booking systems, online booking procedure of railways, airlines, tourist and religious places, hotels and entertainment industry.	08
10	<b>E-Commerce in India:</b> State of e-commerce in India, problems and opportunities in e-commerce in India, legal issues, Social and Ethical Issues, future of e-commerce, Mobile Commerce.	08
11	<b>Security in e-commerce:</b> Setting up Internet security, maintaining secure in Formation, encryption, digital signature and other security measures.	08
<b>Total</b>		<b>48</b>

<b>Recommended Books</b>
<p>Reference Books:</p> <ol style="list-style-type: none"> <li>1. Daniel Amor, E Business R(Evolution), Pearson Edude.</li> <li>2. Krishnamurthy, E-Commerce Management, Vikas Publishing House.</li> <li>3. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.</li> <li>4. P. T. Joseph, E-Commerce: A managerial Perspectives, Tata McGraw Hill.</li> <li>5. Doing Business on the Internet E-COMMERCE (Electronic Commerce for Business): S. Jaiswal, Galgotia Publications.</li> <li>6. C.S.V.Murthy: E-Commerce-Concepts, Models &amp; Strategies, Himalaya Publishing.</li> <li>7. Kamalesh K Bajaj &amp; Debjani Nag: E-Commerce, the Cutting Edge of Business- Tata McGraw-Hill, New Delhi.</li> </ol>



**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name :- Insurance and Transport**  
**Course Code :- 106 – b.**

**Objectives :-**

1. To acquaint students with the concept of Insurance and Transport.
2. To introduce the scope of Insurance including Life & General Insurance and Transport including Travel & Tourism.
3. To make the students aware of carrier opportunities in the field of Insurance & Transport and impart appropriate skills.

**Marks : 100**

**No. of Lectures 48**

**Term I - INSURANCE**

Unit No.	Topic	Lectures
1.	<b>Concept of Insurance</b> Risk : Meaning, Definition & Scope ---Types: Human & Business ---Types of Business Risk. Insurance : Meaning, Definition, Need & Scope -Insurance Contract: Meaning, Components.	12
2.	<b>Life Insurance</b> Meaning, Definition, Need, Scope & Principles of Life Insurance. Types of Life Insurance Policies---Carrier Options in Life insurance Business.	12
3.	<b>General Insurance</b> Meaning, Definition, Need, Scope & Principles of General Insurance. Types of General Insurance --- Carrier Options in General Insurance Business.	12
4.	<b>Role of Insurance in Logistics</b> Meaning and significance of logistics – Need for social security – Procedure for claim settlement – Role of Insurance in Logistics in the Global age and challenges.	12
<b>Total</b>		<b>48</b>

**Term II - TRANSPORT**

Unit No.	Topic	Lectures
5.	<b>Concept &amp; Role of Transport</b> Meaning, Need & Scope of Transport. ---- Transport being a primary mode of Service Trade--Role of Transport in Indian economy --- Existing problems & suggestions.	12
6.	<b>Modes of Transport</b> Types of Transportations in India --- Meaning, Need, Scope & Advantages. Road Transport & Rail Transport in India – Their Suitability and Limitations.	12
7.	<b>Other means of Transports</b> Water Transport : Meaning, Scope, Advantages & Limitations. Air Transport : Meaning, Scope, Advantages and Limitations -- Choice of Transport Mode : Cost, Speed & Flexibility.	12
8.	<b>Travel &amp; Tourism</b> Meaning & Scope - Role and contribution to Economic Development -- Means of Travel & Tourism in India. – Career Options in Travel, Tourism and Hospitality Management.	12
<b>Total</b>		<b>48</b>

## **Recommended List of Reference Books**

### **Insurance**

1. Insurance --Principles & Practices of Insurance – By : G.S. Pande
2. Theory & Practice of Life Insurance – By : Mitra
3. Insurance Principles & Practice  
– By : M.N.Mishra & S.B. Mishra (S. Chand Publication)
4. Insurance & Risk Management – By : P.K.Gupta (Himalaya Publication)

### **Transport**

1. Economics of Transport – By : S.K. Shrivastava
2. Transport in Modern India – By : P.P. Bhatnagar
3. Rail & Road Transport in India – By : M.D. Mathur
4. Transportation System & Policy Analysis  
– By : S. Sriraman (Himalaya Publication)
5. Challenges To Transportation – By : Rupenthal Karl M. (ASRC Hyderabad)

### **Tourism**

1. Introduction to Tourism – By : M.A. Khan
2. Tourism Management – By Seth P.N. (Sterling Publishers, Delhi)
3. Tourism & Travel : Concepts & Principles  
– By : Negi Jagmohan (Gitanjalee Publishers, Delhi)
4. Tourism in India : Trends & Issues – By : Dharmarajan S & Seth Rabindra (Har-Anand Publishers, Delhi)

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Marketing and Salesmanship**  
**[Fundamentals of Marketing]**  
**Course Code -: 106 – c.**

**Objectives -:**

- 1) **General Objective of the Paper.**
  - a) To create awareness about market and marketing.
  - b) To establish link between commerce/Business and marketing.
  
- 2) **Core Objectives of the paper.**
  - a) To understand the basic concept of marketing.
  - b) To understand marketing philosophy and generating ideas for marketing research.
  - c) To know the relevance of marketing in modern competitive world.
  - d) To develop an analytical ability to plan for various marketing strategy.

**Term I**

Unit No.	Topic	No. of Lectures
<b>1</b>	<u><b>Basics of marketing</b></u> 1.1) Market – Marketing – Introduction, Meaning, Definition, Scope, Types and Significance. 1.2) Marketing Management – Introduction, Meaning, Definition, Scope, and Significance. 1.3) Functions of Marketing – Basic Functions, Functions of Exchanges, and Subsidiary Functions. 1.4) Marketing Mix - Introduction, Meaning, Definition, Scope, and Significance.	
<b>2</b>	<u><b>Marketing Environment</b></u> 2.1) Introduction – Definition and Nature. 2.2) Factors Constituting Marketing Environment. 2.3) Micro and Macro Environment. 2.4) Impact of Marketing Environment on Marketing Decisions.	
<b>3</b>	<u><b>Buyer Behaviour and Market Segmentation</b></u> 3.1) Introduction – Meaning, Definition, Scope and Significance of Buyer Behavior. 3.2) Determinants of Buyer Behaviour, Stages of Buyer Behaviour – Buying Process.. 3.3) Introduction, Meaning, Importance of Market Segmentation. 3.4) Bases for Segmentation – Qualities of Good Segmentation.	
<b>4</b>	<u><b>Product and Pricing Decision</b></u> 4.1) Concept of Product – Product Classification. 4.2) Factors Considered For Product Management – Role of Product Manager. 4.3) Factors Affecting Pricing Decisions – Pricing Objectives. 4.4) Pricing and Product Life Cycle – Pricing Methods.	
<b>Total</b>		<b>48</b>

## Term II

Unit No.	Topic	No. of Lectures
5	<b><u>Logistics and Supply Chain Management</u></b> – 5.1) Introduction – Definition – Objectives – Scope and Significance 5.2) Market Logistics Decisions – Channel Structure. 5.3) Designing Distribution Channels. 5.4) Types of Marketing Channels.	
6	<b><u>Market Promotion Mix</u></b> – 6.1) Promotion Mix – Meaning, Scope and Significance. 6.2) Factors Affecting Market Promotion Mix 6.3) Advertisement and sales Promotion – Meaning and Definition. Means and Methods of Sales Promotion. 6.4) Advertising Meaning and Goals – Advertising Media– Meaning, Types, Advantages and Limitations.	
7	<b><u>Rural Marketing</u></b> – 7.1) Introduction – Meaning – Definition – Features – Importance – 7.2) Rural Marketing Mix – Importance, Elements, Scope 7.3) Present Scenario of Rural Market – 7.4) Problems And Challenges of Rural Market –	
8	<b><u>Services Marketing</u></b> – 8.1) Introduction – Meaning – Definition – Features – Importance of Services – Significance of Services in Marketing. 8.2) Classification of Services – Marketing of Industrial Goods Services, Marketing of Consumer Goods Services. 8.3) Marketing Mix for Services 8.4) Services Marketing And Economy – Scope of Services Marketing in Generation of Job Opportunity, Role of Services in Economy, Services Quality	
<b>Total</b>		<b>48</b>

### Recommended Books

Sr. No.	Name of the Book	Publisher	Author
1	Marketing Management	Macmillan Publication	V.S.Ramaswamy S. Namakumari
2	Principals of Marketing	Prentice- Hall of India Pvt. Ltd.	Philip Kotler Gary Aramstrong
3	Rural Marketing	Dorling Kindersley (India) Pvt.Ltd.Pearson	Pradeep Kashyap
4	Marketing Management	Himalaya Publishing House	Dr.K.Karuna Karan
5	Marketing in India	Vikas Publishing House	S. Neelamegham
6	Basics of Marketing Management	S. Chand	Dr.R.B.Rudani
7	Services Marketing	Himalaya Publishing House	V. Venugopal Raghu V.N.

**F.Y. B.Com.**

**Optional Paper**

**Subject Name -: Consumer Protection and Business Ethics**

**Course Code -: 106 – d.**

**Objectives:**

- 1) To acquaint the students with consumer and consumer movement.
- 2) To make the students aware about consumer rights, duties and mechanism for resolving their disputes.
- 3) To make students aware about role of united nations and consumers' associations in protection of consumers.
- 4) To make the students aware about laws relating to consumers.
- 5) To acquaint the students with role of Business Ethics in various functional areas.

<b>First Term</b>		<b>Periods</b>
<b>Unit – I</b>	<b>Consumer and Consumerism:</b>	<b>[18]</b>
	<ol style="list-style-type: none"><li>1. 1. Consumer: Concept, Meaning, Definition and Features</li><li>1. 2. Problems of consumers: Rural and urban, Its Nature and Types</li><li>1. 3. Consumerism – Meaning, objectives, Benefits-Consumerism in India</li><li>1. 4. Rights, Duties and Responsibilities of Consumers.</li><li>1. 5. Consumer Movement-Meaning-Definition-Importance, Scope and Features</li><li>1. 6. Development of Consumer Movement in India- Problems and Prospects.</li></ol>	
<b>Unit – II</b>	<b>Voluntary Consumer Organizations (VCO) and Consumer Protection:</b>	<b>[06]</b>
	<ol style="list-style-type: none"><li>2. 1. VCO: Origin, Importance, Functions and Limitations</li><li>2. 2. Challenges before VCOs</li><li>2. 3. Role of Voluntary Consumer Organization in Consumer Protection in the area of marketing &amp; Advertisements.</li><li>2. 4. Consumer Education-Meaning-Definition-Objectives</li></ol>	
<b>Unit - III</b>	<b>United Nations Guidelines for Consumer Protection:</b>	<b>[06]</b>
	<ol style="list-style-type: none"><li>3. 1. United Nations and Consumer Protection</li><li>3. 2. United Nations Guidelines for Consumer protection, 1985.<ol style="list-style-type: none"><li>3.2.1. Objectives.</li><li>3.2.2. General principles.</li><li>3.2.3. Guidelines<ol style="list-style-type: none"><li>a) Physical Safety</li><li>b) Promotion and protection of consumers' economic interests</li><li>c) Standards for the safety and quality of consumer</li></ol></li></ol></li></ol>	

	<p>goods and services</p> <p>d) Education and Information Programme</p> <p>e) Promotion of Sustainable Consumption</p>	
<b>Unit - IV</b>	<b>Consumer Protection Act, 1986:</b>	<b>[18]</b>
	<p>4. 1. Background – Need-Scope and Features</p> <p>4. 2. Definitions- Consumer-Goods-Services- Complaints, Complainant- Defect in Goods- Deficiency in Services, Unfair Trade Practices, Restricted Trade Practices.</p> <p>4. 3. Consumer Protection Councils-Composition-Working-and Objectives of:</p> <p>a) District Consumer Protection Council</p> <p>b) State Consumer Protection Council</p> <p>c) National Consumer Protection Council</p> <p>4. 4. Mechanism for Redressal-Composition and working of- Consumer Disputes Redressal Agencies:</p> <p>a) District Consumer Disputes Redressal Forum</p> <p>b) State Consumer Disputes Redressal Commission</p> <p>c) National Consumer Disputes Redressal Commission</p> <p>4. 5. Procedure of filing complaints</p>	
<b>Second Term</b>		
<b>Unit - V</b>	<b>An overview of various Laws for the Protection of Consumers:</b>	<b>[18]</b>
	<p>5. 1. The Bureau of Indian Standards Act, 1986 (Sections - 1,10,11,14,33)</p> <p>5. 2. The Competition Act, 2002 (Sections – 1, 3 to 6)</p> <p>5. 3. Right to Information Act, 2005 (Sections – 1 to 11, 18, 19 and 20)</p> <p>5. 4. Food Safety and Standards Act, 2006 (Sections– 1to 3, 18 to 28)</p>	
<b>Unit - VI</b>	<b>Protection of Consumer against Standard Form of Contract:</b>	<b>[04]</b>
	<p>6. 1. Nature and Relevance of Standard Form of Contract</p> <p>6. 2. Judicial Response to Standard Form of Contract in India and abroad</p> <p>6. 3. Legislative Reforms</p>	
<b>Unit - VII</b>	<b>Conceptual Framework of Business Ethics:</b>	<b>[08]</b>
	<p>7. 1. Concept of Ethics: Its Meaning and Nature</p> <p>7. 2. Definition importance and Scope of Business Ethics</p> <p>7. 3. Types of Business Ethics; viz:-</p> <p>i. Professional business ethics</p>	

	ii. Ethics of accounting information iii. Ethics of Production iv. Ethics of intellectual property skill, knowledge etc.	
<b>Unit - VIII</b>	<b>Business Ethics in Modern Times:</b>	<b>[10]</b>
	8. 1. Social Responsibilities of Business 8. 2. Business Ethics and Environmental Issues: Indian and International level - Green initiatives 8. 3. Management and Ethics i. Ethical Issues in Marketing ii. Ethical Issues in Human Resource Management	

***Recommended Books:***

1. Law of Consumer Protection in India- P.K. Majumdar (2011), Orient Publishing Co. New Delhi.
2. Practical Guide to Consumer Protection Law, Anup K. Kaushal (2006), Universal Law Publishing Co, New Delhi.
3. Consumer Protection Laws, Prof. RakeshKhanna, (2005) Central Law Agency, Alahabad.
4. Business Ethics and Corporate Governance, S.K. Bhatia 92005),
5. Consumer Protection Law, Dr. S. R. Myneni,(2010), Asia Law House, Hyderabad.
6. Law of Consumer Protection, Dr. Gurbax Singh, Bharat Law Publication, Jaipur.

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**Optional Paper**

**Subject Name -: Business Environment & Entrepreneurship**

**Course Code -: 106 – e.**

**Objectives :**

1. To make the students aware about the Business Environment.
2. To create entrepreneurial awareness among students,
3. To motivate students to make their mind set for taking up entrepreneurship as career.

**FIRST TERM**

Unit No.	Name of the Topic	Periods
1	Business Environment - Concept- Importance - Inter relationship between environment and entrepreneur, Types of Environment- Natural, Economic - Political - Social - Technical - Cultural - Educational - Legal - Cross-cultural – Geographical etc.	12
2	Environment Issues Protecting the Natural Environment – prevention of pollution and depletion of natural resources; conservation of natural resources, Opportunities in Environment.	12
3	Problems of growth Relevance to entrepreneurship -Unemployment- Poverty-Regional imbalance- Social injustice-Inflation - Parallel Economy- Lack of Technical knowledge and information.	12
4	The Entrepreneur- Evolution of the term entrepreneur-" Competencies of an entrepreneur - Distinction between entrepreneur and manager- Entrepreneur and enterprise -Entrepreneur and Intrapreneur. Entrepreneur and Entrepreneurship.	12

**SECOND TERM**

Unit No.	Name of the Topic	Periods
1	Entrepreneurial Behaviour - Comparison between entrepreneurial and non-entrepreneurial Personality-Habits of Entrepreneurs - Dynamics of Motivation	12
2	Entrepreneurship Importance of Entrepreneurship - Economic Development and Industrialization, Entrepreneurship in Economic Theory- Role of Entrepreneurship ~ Entrepreneur as a catalyst.	12
3	<u>National Level</u> Training Organizations in promoting entrepreneurship (1) Entrepreneurship Development Institute of India (EDII) <u>State Level</u> Training Organizations in promoting entrepreneurship (1) MCED (2) DIC (3) Maratha Chamber of Commerce and their role. (4) Local NGO's and their roles.	12
4	Biographical study of entrepreneurs i) Narayan R. Murthy ii) Cyrus Poonawala iii) Any successful Entrepreneur from your area (Milind Kamble)	12



## **Recommended Books & Journals**

### **Recommended Books**

1. Dynamics of Entrepreneurship Development and Management - Desai Vasant – Himalaya Publishing House
2. Crusade - Shirke B.G. - Ameya Prakashan
3. Entrepreneurship - Robert D. Histrith - Tata McGraw Hill Publishing Co.
4. Entrepreneurial Development – Khanka - S. Chand.
5. Entrepreneurial Development – Gupta, Shrinivasan - S. Chand.
6. Essentials of Business Environment - K. Aswathappa - Himalaya Publishing House
7. Indian Economy - Dutta Sundaram –
8. A complete guide to successful Entrepreneurship – Pandya G. N. – Vikas Publishing House
9. Trainers Manuals - NIESBUD, New Delhi.
10. Trainers Manuals - NIMID, Mumbai,
11. Business Environment - Francis Cherunilam – Himalaya Publishing House.
12. Business Environment - Tandon B C.
13. Udyog - Udyog Sanchalaya, Mumbai.
14. Environmental Studies basic concepts – U. K. Ahluwalia
15. Environmental Pollution & Health – U. K. Ahluwalia

### **Recommended Journal**

1. The Journal of Entrepreneurship EDI Ahmedabad.
2. Udyojak – M.C.E.D.
3. Government of Maharashtra Website
4. Government of India Website

**F.Y. B.Com.**  
**Optional Paper**  
**Subject Name -: Foundation Course in Commerce.**  
**Course Code -: 106 – f.**

**Objective :**

1. To Study the forms of Business Organization.
2. To understand the basic concepts and recent trends in Commerce & Business Practices.
3. To Understand the functioning of Stock Exchange, Commodity exchange, Trade. Associations and Chamber of Commerce.

**FIRST TERM**

Unit No.	Name of the Topic	Periods
1	Organization - Meaning, Importance Forms of business organizations; Proprietary - Partnership firms- Limited Liability Partnership (LLP) -Joint Ventures and Business Alliances, Organizational structures, Functional areas of business and their operations, Formal & informal organizations: principles of organizations, Criteria for grouping	12
2	Economic Sector - Role and challenges of Public sector, Co operative Sector, Joint Sector (Public and Private). Corporate Sector and Non Government organizations. Industrial Policy, Foreign Investment Policy, Current Foreign Policy, Joint ventures, drafting of agreement	12
3	Business Practices and Government Policies - Importance - Role of Trade. Commerce & Industry, Outsourcing - franchising -Turn key Management - Important Features of current labour policy. Indian joint ventures abroad & Indian experiences.	12
4	Recent Trends in Service Sector, Banking Sector - ATM Debit & Credit Cards Internet Banking etc. Insurance Sector - Malhotra Committee Report - Opening of insurance sector for private players. Logistics - Net working – Importance - Challenges.	12

**SECOND TERM**

Unit No.	Name of the Topic	Periods
1	Security Market Stock Exchange –Introduction of stock exchanges in India, Online Trading, Working of Stock Exchange, Trading through NSDL, Role of SEBI, Protection & Education of Investors. SEBI & Its Guidelines.	12
2	Commodity Exchange & its working - History & overview, terms used of Commodity Market - working & procedure followed in commodity exchanges, future of commodity exchanges. Study of regional / local commodity market.	12
3	Business Ethics	12

	Nature, purpose of ethics and morals for organizational interests; ethics and conflicts of interests; ethical and social implications of business policies and decisions; Corporate Social Responsibility; ethical issues in Corporate Governance. Ethics in Accounting and Finance	
4	Basic Concepts in Commerce Study of following terms & concepts used in recent field of commerce	12

Sr. No.	Terms / Concepts	Meaning
1	Affidavit	A declaration in writing made on oath.
2	Automation	Use of automatic machinery in industries / organizations.
3	Assimilation	Joining the culture of two or more activities / organizations.
4	Agmark	A mark showing standard / quality of agriculture produce.
5	B P O	Business Process Outsourcing
6	Benchmarking	A level or standard in a scale against which performance can be evaluated. It is a method of job evaluation
7	Body Shopping	A consultancy supplying people at work contract basis.
8	Brand Equity	Goodwill attached to name
9	Bank rate	It is the rate at which the central bank of a country grants credit to the other banks.
10	Capital Intensive	Those industrial activities where the preparation of fixed capital is more than the other factors of production like land, labour, etc.
11	Consortium	A combination of large number of bidder to fulfill the contract deal.
12	Consumer Delight	Consumer's complete satisfaction.
13	Credit rating	Assessment of credit worthiness of an organization by external agency.
14	Credit squeeze	It is state's interference to regulate the level of economic activity by reducing the money supply. In other words, it is an effort of making credit more expensive through controls on bank.
15	Corporate Governance	Accountability of the managers / directors of a company. The recent provision about the listed companies required them to comply with the through annual accounts & reports.
16	Consumerism	A materialistic attitude of consumers of consuming maximum without any consideration of future.
17	Dis-Investment	A policy of the government of gradually withdrawing the investments of public funds from a public sector unit.
18	Distributive negotiation	A term used in personal management of a trade unions approach for solving disputes.
19	Dumping & antidumping	A policy of capturing slice of market by pouring a huge stock a policy of the government of prohibiting the capturing of market by way of dumping.
20	Depository	A system whereby the shares can be lodged physically & need not be handled in the course of each transaction.
21	EXIM	Policy regarding import & exports.
22	E-Commerce	Commercial activities with help of electronic devices.
23	Factoring	Taking responsibility of collecting accounts receivable.

24	Franchise	An agency given for distribution of manufactured products.
25	Fringe benefit	A reward beyond the basic day for the job.
26	Globalization	A process of world market open to local markets.
27	Grapevine	The informal communication of an organization many times more effective than the formal one.
28	Hacking	The unauthorized breaking into data base of a computer.
29	Hedging	Protecting oneself against the financial loss.
30	Internal customer	One department with in an organization becoming customer of another.
31	Entrepreneurship	Entrepreneurship is developed from a particular organization.
32	ISO	International Organization of Standard's.
33	ISI	Indian Standard Institute.
34	Internet Banking	Banking activities with the help of internet service.
35	Just in Time	A system of procuring inventory as & when required.
36	Knowledge worker	A worker working in modern society with lost of areas of knowledge.
37	Kaizen	The Japanese concept of continuous improvement.
38	Labour intensive	An organization or an activity mainly relying on labour force as it's investment / capital.
39	Learning organization	An organization where the worker's are always wanting to learn.
40	Liberalization	An economic policy of allowing foreign players to enter the local markets in competition with the indigenous ones.
41	Logistics	A term originally used in military organizations, for moving of troops & equipments, it refer to the detailed planning of the process of distribution or redistribution.
42	Mutual Funds	A method of raising finance for investing in some other capital issues.
43	Mission	An organization goal / objective behind it's establishment.
44	Market niche	A unique place of gap in the market for a given product.
45	Mergers & Acquisitions	Mergers in a combination of two or more business to share risk & rewards no one party to obtain control over the other . Acquisition is the acquiring of share of a company by another by paying purchase consideration as a fair value.
46	Non performing assets	An asset created but not showing any results (a banking asset created by way of loans / advances now becoming unrecoverable.
47	Niche strategy	A marketing strategy adopted for a small segment.
48	Negotiable Instrument	An instrument in commercial transactions recognized by the Negotiable Instrument Act.
49	Organizational Behave our	A branch of personal management considering interperson & behavioral aspects.
50	Outsourcing	A policy of an organization of depending on external agency for a functional area.
51	Organizational Development	Efforts made for the development of human factor in an organization.
52	Patent	A right on a product or invention claiming it's originality or know-how.
53	Primary Market	The Market where the first sale of securities is made by way of an offer from the corporate body to the investors.
54	Profolio	A branch of financial management dealing with the investment of an

	Management	organization.
55	Public Relations	Efforts made by an organization of establishing report with the stake holders & the general public.
56	Privatization	A policy of the state of disinvestments in the public sector organization by offering its shares to the public at large.
57	Quality circle	A small group of individuals of an organization, trying to solve their practical problems.
58	Recession	A phase in an economy when there is sharp decline of demand for goods & services.
59	Sensex	Sensitive index number of a stock market.
60	Subsidy	A financial support provided by the government.
61	Security market	A market where the corporate securities i.e. shares are bought & sold.
62	Surrender value	It is the left over value that the insurance company is expected to pay.
63	Speed capital	It is the initial amount of capital required for any business to be invested by the owner.
64	Service Organization	An organization established for rendering service in support of trade.
65	SWOT analysis	An analysis of an individual or organization about the strength, weaknesses, opportunities & Threats.
66	TQM	Total Quality Management.
67	Trade Cycle	A recurring sequence of changes in business activity, indicating period of prosperity, decline, depression etc.
68	Trade mark	A mark / logo of an organization treated as official seal.
69	Technology transfer	The transfer of a technology from an area in which it had been successfully applied to an area, which it has not yet been tried.
70	Tele Conferencing	A discussion of participants, geographically scattered
71	Underwrite	To ensure or guarantee to purchase the stock of shares.
72	Value Addition	Increase in the value of an item by adding inputs on it.
73	WTO	World Trade Organization established in 1995.
74	Yellow page	A page reserved for commercial advertisers.
75	Zero based budgeting	The use of budgets which starts from a present base of zero and regard all items as being new rather than in continuation of existing ones. In practice, this means a budget has to justify each of expenditure every year.

#### Recommended Books

##### **RECOMMENDED BOOKS AND PERIODICALS.**

1. Financial Management – I. M. Pandey.
2. Financial Management – Theory & practical – Prasanna Chandra
3. Financial Management – S. C. Kuchhal
4. Public Sector in India – Laxmi Nariyan
5. Indian Economy – Rudder Datt
6. Indian Economy – KPM Sundaram
7. Law & practice of banking – S. R. Davar
8. Chamber of Commerce and Trade Association in India – Dr. B. R. Sabade & M. V. Namjoshi
9. The Indian Financial System – Vasant Desai
10. Business Administration – Dr. Y. K. Bhushan
11. Stock exchange Official Directory – The Bombay Stock exchange Publication

**Journals & Periodicals**

1. World of Business and –The Maharashtra Chamber Of Commerce, Industries & Agriculture, Pune
2. Sampada Chamber patrika – The Maharashtra Chamber of Commerce & Industries, Mumbai
3. Vanijya Vishwa – Pune Merchants Chamber, Pune

**SAVITRIBAI PHULE PUNE UNIVERSITY  
(SPPU)  
(Formerly University of Pune)**



**CREDIT SYSTEM (CS)**  
For  
**SEMESTER PATTERN**  
**Post Graduate Programs**

# Handbook

(Updated Version)

**Prepared by**

**Professor Vilas Kharat**

**Dr. V. B. Gaikwad**

## *MESSAGE FROM HON. VICE CHANCELLOR, SPPU*

*The world of today is full of competition in each and every field. In order to cop-up with the needs of the time it has become necessary to prepare ourselves in tune with the norms and practices accepted and implemented across the globe. As such, one of the important aspects is to add a value to a postgraduate degree by imparting a knowledge based and hands-on experience training to the students. This very aspect demands the choice based credit system for the PG programs. The Credit System (CS) not only nurtures a student to put his best efforts for touching the heights of excellent education based knowledge but also allows carrying the credits earned from one University to the other in India and abroad as well. In fact, there are as many aspects that are of great importance in the CS but *CONTINUOUS ASSESSMENT* is the backbone and so it has to be handled with care so as to visualize a student with potential for excellence. Our University has jumped into this well of 21<sup>st</sup> century education with a firm footing of CS from the academic year 2013-14 for the PG programs conducted at affiliated colleges also. I am confident that the teachers involved in the implementation part would shoulder the responsibility & add values to it.*

*This handbook of CS is prepared to facilitate the aims and objectives of the system and the teachers as well as students would testimony the lucidity and essence of it.*

*Dr. W. N. Gade*



## *PREAMBLE*

*In pursuance of the decision to implement Credit System at the Post Graduate level and ensure continuous assessment, the SPPU has decided to incorporate the Credit System (CS) under Semester Pattern in all its affiliated colleges and recognized institutions where postgraduate programs are conducted.*

*The Hon. Vice-Chancellor and the authorities of University of Pune, namely, the members of the Management Council, the*

*Deans of Faculties, the Members of the Academic Council, and the chairmen of the board of studies are the pillars in shaping the system for the cause of the benefit to the students.*

*Of course, all the teachers are committed to handle the credit system for the better and result oriented output in the enhancement of knowledge level of each and every student.*

*Down the line of every 2/3 years, the University is keen to inculcate the system and observe the overall development of its students.*

## CONTENTS

1. *General administration*
2. *Conduct of the Credit System*
3. *Examination Rules*
4. *Assessment and Grade point average*
5. *Modus Operandi of Evaluation under Credit System- 2 years programs*
6. *Modus Operandi of Evaluation under Credit System- 3 years programs*

## 1. General administration

- 1.1 These rules and regulations shall be applicable for the conduct of CS for the Departments on the Campus of SPPU (implemented in AY 2001-02) as well as for the affiliated colleges and institutes (implemented in AY 2013-14).
- 1.2 As per the UGC directives, 10 point scale is applicable from the academic year AY 2015-16 (not applicable to the students admitted before the AY 2015-16).
- 1.3 CS Coordination Committee.

1. *Director, BCUD – Chairman*
2. *Deans of faculties - Members*
3. *HoD's from Campus(02) - Members*
4. *Professors from Campus(02) - Members*

*This Committee shall take all decisions arising pertain to these rules and the implementation of CS.*

## 2. Conduct of the Credit System

2.1 The Post-Graduate Degree will be awarded to those students who earn the minimum number of credits as follows:

Name of the Faculty	Total credits	Average credits per semester
<i>Science, Engineering, Pharmacy, Management, Technology</i>	100	25
<i>Arts &amp; Fine Arts, Social Sciences, Commerce, Law, Education*, Physical Education*</i>	64	16

(\* - will be as per the directives of Education Council)

- In a case, where the PG program duration is of one year, such a program shall consist of minimum 40 credits.
- Except the credits for practical courses, wherever applicable, a student can register for less number of courses in a semester subject to the condition that such a student will have to complete the degree in a maximum of four (five) years for 2 years (3 years) program. This facility will be available subject to the availability of concerned courses in a given semester and with a maximum variation of 25 % credits (in case of fresh credits) per semester.

**2.2** The proportion of Laboratory courses shall be around 40 % of the total credits of a PG program. Project work, if included, shall consist of NOT more than 10 % of the total number credits for PG programs in Science, Engineering, Technology, Management, Pharmacy and 05 % of the total number of credits for other PG programs.

**2.3** One credit will be equivalent to 15 clock hours of teacher-student classroom contact in a semester. There will be no mid-way change allowed from Credit System to Non-credit (external) System or vice versa.

**2.4** A post graduate teacher in a subject shall be affiliated to only ONE post graduate center at any given time and for only one subject.

**2.5** For the routine conduct of the CS in a PG Department on the campus of SPPU, HoD will be the Chairperson and the teachers (employees of SPPU) in the Department will be the members.

While for a PG Department in colleges/institutes, Dean of the concerned faculty shall be the Chairperson and the constitution of faculty wise committee shall be as follows:

- 1. Dean of the Faculty – Chairman*
- 2. Two HoD's of the Post Graduate centers from the respective faculty nominated by the Hon. Vice Chancellor*
- 3. One HoD/Professor/Subject expert from the Post Graduate Department of the University Campus nominated by the Hon. Vice Chancellor*
- 4. Director, BCUD - Coordinator*

2.6 Among the minimum number of credits to be earned by a student to complete a Post Graduate Degree program (100/64 credits), the student will have to earn minimum 75% credits from the parent Department (subject) and the remaining up to 25 % credits could be earned from the parent Department (subject) or any subject/s of any faculty conducted at other PG Department/ PG Center. In any case, a student will have to earn compulsory credits from the parent Department (subject) over and above.

### 3. Examination Rules

3.1 Assessment shall consist of CA-Continuous assessment and ESE(ETE)-End of Semester(Term) Examination with an equal weightage of 50%.

3.2 The concerned teacher is responsible for conduct and evaluation towards CA and shall announce at the beginning of the course about the mechanisms under which CA would take place. However, the ESE (ETE) shall cover the entire syllabus prescribed for that course.

3.3 The CA towards 50% marks will be a continuous activity and at least two written tests (for 60-80% marks out of CA marks) must be conducted in addition to at least two following mechanisms (for 20-40% marks out of CA marks) for a full course of 4/5 credits.

*Journal/Lecture/Library notes, Short Quizzes, Seminar presentation, Assignments, Extension Work, An Open Book Test (book to be decided by the concerned teacher), Mini Research Project by an individual student or a group of students*

A teacher may devise a mechanism other than written test in addition to above in order to flourish the course contents.

a) It is mandatory for a teacher to hand over the assessed answer sheets to the respective students well before the commencement of the ESE (ETE).

b) It is also mandatory to declare the score gained by all the students in a course towards CA on the notice board duly signed by the concerned teacher of the course and the HoD/Principal/Director.



- 3.4 ESE (ETE) for the remaining 50% marks will be conducted by SPPU.
- 3.5 A student has to obtain 40 % marks taken together of CA and ESE (ETE) with a minimum of 30% in each of these separately.
- 3.6 A student will have to obtain a minimum aggregate of 40% marks in each course to be counted for the minimum number of credits required for the completion of the program.
- 3.7 If a student misses an internal assessment examination he/she will have a second chance with the endorsement of the HoD/Principal/Director in consultation with the concerned teacher. Such a second chance shall not be the right of the student.
- 3.8 a) If a student is declared as “PASS” in a course (Grade other than F), then the student cannot choose/reappear that course unless appearing under “CLASS/GRADE IMPROVEMENT” for ESE (ETE) only.  
CA is not available for a course in which the student has been declared as “PASS”.
- b) If a student is declared as “FAIL” (Grade F) in a course, then the student is allowed to choose such a course, with CA and ESE (ETE) both, only in a semester in which the course is conducted, irrespective of the previous score in CA.

Otherwise, the student may appear only for ESE (ETE) in that course in any of the following/forthcoming semester, provided that the student has scored at least 15% of the total 100% (or 30% of the 50% of the total marks) in CA.

**Explanation:**

$X = 100\%$

<i>CA score</i>	<i>ESE/ ETE Score</i>	<i>CA+ ESE/ETE</i>	<i>Result</i>
$\geq 15\%$ of X	$\geq 15\%$ of X	$\geq 40\%$ of X	PASS/Earned Credits with Grade
$\geq 15\%$ of X	$\geq 15\%$ of X	$< 40\%$ of X	FAIL/No Credits Earned

Y = Course,

Odd-Sem = First Half/Semester of an Academic Year

Even-Sem = Second Half/Semester of an Academic Year

<i>Semester in which Y is conducted</i>	<i>Status of the Y for a student</i>	<i>Future scope for improvement in Y</i>
Odd-Sem	PASS	Under CLASS IMPROVEMENT only
	FAIL	The student can appear for ESE (ETE) in any subsequent semester, provided the student has scored $\geq 15\%$ of X. OR The student can choose/register Y with CA and ESE (ETE) both in an Odd-Sem.
Even-Sem	PASS	Under CLASS IMPROVEMENT only
	FAIL	The student can appear for ESE (ETE) in any subsequent semester, provided the student has scored $\geq 15\%$ of X. OR The student can choose/register Y with CA and ESE (ETE) both in an Even-Sem.

c) In case of 3.8(b), the maximum duration available to register/reappear for a course will be as follows.

# 2 years PG Program – Up to 4 (four) years  
*(i.e. if a student is registered/admitted for first semester in 2013-14, then the student is allowed to register/reappear up to second semester in 2016-17)*

# 3 years PG Program – Up to 5 (five) years  
*(i.e. if a student is registered/admitted for first semester in 2013-14, then the student is allowed to register/reappear up to second semester in 2017-18)*

d) In the case of 3.8(b), the number of attempts (excluding registered for first time) available to register/reappear for the course would be 3(three) only, subject to 3.8(c).

e) In an exceptional case, if there are sufficient number of students who wish to register for a course for CA and ESE (ETE) both in which they are failed, then such a course can be conducted in the immediate following semester only, in addition to the courses conducted in that semester. However, there cannot be more than two such courses at a time in that semester.

3.9 The student will be finally declared as failed if the minimum numbers of credits are not earned within a total period of Four and Five years respectively for 2 years PG Program and 3 years PG Program. After that, such a student will have

to seek fresh admission as per the admission rules prevailing at that time.

- 3.10 A student cannot register for the third/fourth semester, if she/he fails to complete 50% credits of the total credits expected to be ordinarily completed within two semesters.
- 3.11 There shall be a revaluation of the answer scripts of ESE (ETE) as per Ordinance No.134 A & B, but not of CA.
- 3.12 While marks will be given for all examinations, they will be converted into grades. The Semester End Grade sheets will be generated by using marks and grades and the final grade sheets and transcripts shall have grade points average and total percentage of marks (up to two decimal points). The final grade sheet will also indicate the PG Department/Center to which the candidate is registered.

## 4. Assessment and Grade Point Average

- 4.1 **The system of evaluation will be as follows:** Each CA and ESE (ETE) will be evaluated in terms of marks. The marks for CA and ESE (ETE) will be added to convert into a grade and later a grade point average. There is no grade independently for CA or ESE (ETE).
- 4.2 Result of a student will be declared for each semester after the ESE (ETE) only.
- 4.3 The student will get a Grade Sheet with total grades earned and a Grade Point Average, after earning the minimum number of credits towards the completion of a PG program (subject to 3.9).

### 4.4 Marks/Grade/Grade Point w.e.f. AY 2015-16 (10 Point Scale):

<b>Marks</b>	<b>Grade</b>	<b>Grade Point</b>
80-100	O: Outstanding	10
70-79	A+: Excellent	9
60-69	A: Very Good	8
55-59	B+: Good	7
50-54	B: Above Average	6
45-49	C: Average	5
40-44	P: Pass	4
0-39	F: Fail	0
-	Ab: Absent	0

*Following will be applicable for all those who are admitted before the AY 2015-16 till they complete the PG program (subject to 3.9).*

<b>Marks</b>	<b>Grade</b>	<b>Grade Point</b>
100 to 75	O: Outstanding	06
74 to 65	A: Very Good	05
64 to 55	B: Good	04
54 to 50	C: Average	03
49 to 45	D: Satisfactory	02
44 to 40	E: Pass	01
39 to 0	F: Fail	00

**4.5 Final Grade w.e.f. the AY 2015-16 (10 Point Scale):**

<b>Grade Point Average</b>	<b>Grade</b>
09.00 – 10.00	O
08.50 – 09.00	A+
07.50 – 08.49	A
06.50 – 07.49	B+
05.50 – 06.49	B
04.25 – 05.49	C
04.00 – 04.24	P
00.00 – 03.99	F

Remark: B+ is equivalent to 55% marks and B is equivalent to 50% marks.

*Following will be applicable for all those who are admitted before the AY 2015-16 till they complete the PG program (subject to 3.9).*

<b>Grade Point Average</b>	<b>Grade</b>
05.00-6.00	O
04.50-04.99	A
03.50-04.49	B
02.50-03.49	C
01.50-02.49	D
00.50-01.49	E
00.00-00.49	F

- 4.7 'B' Grade is equivalent to atleast 55% of the marks as per circular No.UGC- 1298/[4619]UNI-4. (Not applicable for 10 point scale)
- 4.8 A seven point grade system [guided by the Government of Maharashtra Resolution No. NGV-1298/[4619]/UNI.4 and the University regulations] will be followed uniformly for Science, Arts, Mental, Moral and Social Sciences. The corresponding grade table is detailed above.(not applicable for 10 point scale)
- 4.9 If the GPA is higher than the indicated upper limit in the three decimal digit, then higher final

grade will be awarded (e.g. a student getting GPA of 4.492 may be awarded 'A' grade). (Not applicable for 10 point scale)

- 4.10 There will be only final compilation and moderation at GPA (Final) level done at the Department. While declaring the result, the existing relevant ordinances are applicable. There is also a provision for verification and revaluation, subject to the applicable rules at that point of time.
- 4.11 For grade improvement, 2 year program student will have to reappear for ESE (ETE) only in the courses comprising a minimum of 30 credits in case of Science, Engineering, Technology, Management and Pharmacy; 20 credits for other faculties and 12 credits in case of one year degree program. These courses will be from the parent Department only in which the student has earned the credits. A student can opt for the Grade Improvement Program only after the declaration of earning minimum number of credits and completion of the PG Program (subject to 3.9) within the period of two years from the completion of program.
- 4.12 The formula for GPA will be based on Weighted Average. The final GPA will not be printed unless a student passes courses for the minimum 100 credits, 80 credits or 64 credits as the case may be.



4.13 The description for the grades is as follows:

**O: Outstanding:** Excellent analysis of the topic, (80% and above)

*Accurate knowledge of the primary material, wide range of reading, logical development of ideas, originality in approaching the subject, Neat and systematic organization of content, elegant and lucid style;*

**A+ : Excellent :** Excellent analysis of the topic (70 to 79%) *Accurate knowledge of the primary material, acquaintance with seminal publications, logical development of ideas, Neat and systematic organization of content, effective and clear expression;*

**A: Very Good:** Good analysis and treatment of the topic (60 to 69%) *Almost accurate knowledge of the primary material, acquaintance with seminal publications, logical development of ideas, Fair and systematic organization of content, effective and clear expression;*

**B+: Good:** Good analysis and treatment of the topic (55 to 59%)

*Basic knowledge of the primary material, logical development of ideas, Neat and systematic organization of content, effective and clear expression;*

**B: Above Average:** Some important points covered (50 to 54%)

*Basic knowledge of the primary material, logical development of ideas, Neat and systematic organization of content, good language or expression;*

**C: Average:** Some points discussed (45 to 49%)

*Basic knowledge of the primary material, some organization, acceptable language or expression;*

**P: Pass:** Any two of the above (40 to 44%)

**F: Fail:** None of the above (0 to 39%)

4.14 One credit is equivalent to 20-25 marks for evaluation purpose.

4.15 There will be an evaluation of each course by students at the end of every semester. (*Sample format enclosed for course evaluation by students*)

*Relevant circulars from which these rules are compiled and modified*

- 187/2001 (12-7-2001) for both M. A. and M. Sc.
- 168/2002 (14-6-2002) & CBH/5422 of 29-8-2002 in continuation of 168/2002 for Social sciences and Humanities
- 125/2004 (22-3-2004) addition to 168 of 2002
- 296/ 2006 (5-8-2006) for all departments
- UGC D.O. No. F. 1-1/2014(Secy) Dated 12<sup>th</sup> Nov. 2014

## 5. Modus Operandi of Evaluation under Credit System- 2 years programs

- 5.1 Each regular student will normally appear for all the 25% credits in a semester out of the minimum number of credits required to obtain a degree.
- 5.2 A student who wishes to register to the third /fourth semester should have gained at least 50% credits out of the total number of credits offered at the first and second semester of the first year.
- 5.3 Evaluation of each credit will be in two parts, namely CA and ESE (ETE).
- 5.4 A course may be of 1 or 2 or 3 or 4 or 5 credits.
- 5.5 The evaluation of a course means the evaluation of total number of credits of that course. As such, all the credits taken together of a particular course will be evaluated in two parts CA and ESE (ETE).
- 5.6 Weightage for CA would be 50% and for ESE (ETE) would be 50%.
- 5.7 A course will be evaluated in the form of 50 marks for CA and 50 marks for ESE (ETE).
- 5.8 A student will gain all the credits of a course after having obtained minimum 40 marks from CA (minimum 15 out of 50) and ESE (ETE) (minimum 15 out of 50) taken together and will get the

respective grade and grade points in the respective course. Otherwise, a student will get grade F (Fail) in that respective course and will not gain any credits or grade points towards that course.

**5.9 CA:** The teacher would evaluate a student towards a course through interaction throughout the semester which would include one or more (but not less than 4 including compulsory written test/s) of the following mechanisms with their maximum weightage out of 50 marks and this essentially enables the teacher to get positive feedback about a student's overall understanding/ability and in nutshell enhances the teaching-learning process.

- a. Written test – Max 2 with not more than 15 marks for each
- b. Assignment – Max 2 with not more than 5 marks for each
- c. Seminar presentation – 5 marks (not for all the students)
- d. Group discussion – 5 marks (not for all the students)
- e. Extension work – 5 marks (not for all the students)
- f. An open book test – 10 marks ( to be conducted in a classroom for not more than 3 questions)
- g. Report/Note on research paper/s or study tours – 5 marks (not for all the students and to be presented in the respective class)

- *A teacher may propose any other mean towards CA (other than written test) that may suit for a particular course and implement only after the approval of the Departmental Committee constituted and approved by the HoD/Principal/Director.*

5.10 If a student could not attend the CA written test due to some unavoidable reasons then the teacher may consider a request for retest in writing with furnishing the reason of absence.

5.11 If a student failed to gain the credits of any course (declared F grade in that course) then the student can reattempt the course with CA (if the course is conducted in that semester) and ESE (ETE) both or with ESE (ETE) only (if one has scored 15 in CA) in the subsequent ESEs (ETEs) (max. two such attempts) within a period of 4 years (5 for 3 years programs) from the date of admission for the first semester (subject to 3.9).

5.12 In case a student failed to earn the minimum number of credits required for obtaining a degree within the stipulated period of 4 years (5 years for 3 years programs) then such a student will be declared **INCOMPLETE EXIT** and in such a case the student can seek a fresh admission as per the admission rules prevailing at that time.

5.13 The policies and procedures determined by the SPPU from time to time will be followed for the

conduct of examinations and declaration of the result of a candidate.

**5.14 ESE (ETE):** Each credit will be evaluated for a maximum period of 45 minutes. The following would be an outline for setting the question paper for ESE(ETE).

Credits	Duration	Questions to be attempted	Number of Subquestions	Marks for subquestions
1	45 min	1 out of 2	3 (for 2 questions)	4+3+3 or 5+3+2 or 4+4+2
2	90 min	3 out of 5	3 (for 3 questions)	4+3+3 or 5+3+2 or 4+4+2
			2 (for 2 questions)	5+5
3	150 min	4 out of 6	2 (for 4 questions)	4+3+3 or 5+3+2 or 4+4+2
			2 (for 2 questions)	5+5
4/5	180 min	5 out of 8	3 (for 6 questions)	4+3+3 or 5+3+2 or 4+4+2
			2 (for 2 questions)	5+5

**Note:** A question paper for PG program course of 3/4/5 credits under any Faculty other than Science, Engineering, Technology, Management and Pharmacy may contain a question of 10 marks(1 out of 2) without a subquestion.

### 5.15 PRACTICAL EXAMINATION:

- a. The duration for the conduct of ESE (ETE) of a practical course would be same as stipulated in 5.13.
- b. The outline of the distribution of maximum marks for various aspects/mechanisms towards CA is as follows:
  - *Journal – 10 marks*
  - *Viva-voce at the time of submission of each practical – 20 marks*
  - *Group discussion of 5/6 students for testing the understanding level of a student – 10 marks*
  - *Attendance – 5 marks*
  - *Additional practical work of indisciplinary approach – 5 marks*
- c. At least three experiments should be asked for the full course of 4/5 credits and at least two for 2/3 credits.
- d. Certified Journal would be compulsory to appear for the ESE (ETE) practical course.
- e. There shall be two experts from the parent Department and two examiners (one of which will be external) per batch.

5.16 If a student failed to obtain a grade other than F in a course then such a course will not be taken into account for calculating GPA and overall grade. In fact, all the courses in which a student has passed will be taken into account for calculating the GPA and overall grade.

## **6 Modus Operandi of Evaluation under Credit System- 3 years programs**

### **MCA/MSc(IMCA)/3-year Programs:**

- 6.0 All the points other than 5.1 and 5.2 above are applicable to these programs also.
- 6.1 Each regular student will normally appear for all the 25 credits in a semester. (For the program of 150 credits in Six semesters)
- 6.2 A student who wishes to register to the third semester/fourth semester should have gained at least 25 credits. (In case 50 credits offered per year)
- 6.3 A student will be considered to have “Completed” the Internship/Industrial Training upon the submission of certificate of completion, duly signed and sealed, from the Organization where the candidate worked during the Internship period. In case a student failed to submit the required certificate of completion duly signed by mentor/Organization then the student will be considered to have “Not Completed” the required internship/industrial training at the time of the declaration of the result. And hence such student will have to undergo the complete training.





# Savitribai Phule Pune University

## RULES AND REGULATIONS

for

### UG Choice Based Credit System Programme Under Faculty of Science

Effective from June 2019



**Prof. S. D. Dhole**  
Chairman  
UG/PG Rule & Regulation committee,  
SPPU, Pune



**Prof. A. D. Shaligram**  
Dean,  
Faculty of Science & Technology  
SPPU, Pune

## 1. Background/Preamble:

Education plays enormously significant role in building of a nation. There are quite a large number of educational institutions, engaged in imparting education in our country. Majority of them have entered recently into semester system to match with international educational pattern. However, our present education system is churning out youth who have to compete locally, regionally, nationally as well as globally. The present alarming situation necessitates transformation and/or redesigning of system, not only by introducing innovations but developing learner-centric approach.

Majority of Indian higher education institutions have been following the system which obstructs the flexibility for the students to study the subjects/courses of their choice and their mobility to different institutions. There is need to allow the flexibility in education system, so that students depending upon their interests can choose inter-disciplinary, intra-disciplinary and skill-based courses. This can only be possible when choice based credit system (CBCS), an internationally acknowledged system, is adopted. The choice based credit system not only offers opportunities and avenues to learn core subjects but also explore additional avenues of learning beyond the core subjects for holistic development of an individual. The CBCS will undoubtedly facilitate benchmarking of our courses with best international academic practices.

### 1.1 Preface

In a bid to fine tune our scientific education system to the global standards & practices, the Credit-Grade based performance and assessment system will be implemented with effect from June 2019 onwards for all the Under Graduate Programmes (UG) under the Faculty of Science, Savitribai Phule Pune University, Pune, starting with First Year.

With the advent of frontier science, technology and ever-changing expectations from the Industry and Society, it has become imperative to relook at the structure and subject contents of various UG courses to make it contemporary and relevant.

As per the decision by the authorities of Savitribai Phule Pune University, the faculty of Science has prepared the choice based credit system and its structure. The revised course is of 132 credits and 1 credit is equivalent to 15 hours. Assessments in credit system consist of A) In-semester continuous assessment and B) End-semester assessment for the Theory head and Term Work/ Practical / Oral / Presentation at the end of the semester for Practical, Oral, Seminar and Project Head.

The faculty of Science has shouldered the idea of incorporating latest advances in Science and technology and equip the subject/syllabus contents with latest and relevant topics and know-hows. Accordingly the new structure and syllabi are being introduced, to be implemented from the academic year 2019-20 from First Year and it will continue for subsequent years.

1. All UG programmes, under Faculty of Science shall be offered with credit system.
2. All the B.Sc. programmes running under the Faculty of Science will be of three years duration.
3. The total no. of credits required for the completion of the programme is 132 credits.
4. One credit is equivalent to 15 hours.
5. A student is required to earn 132 credits in a minimum period of six semesters.
6. There are eight mandatory credits to be earned by the students for the award of degree.
7. Final CGPA will be calculated on the basis of 132 credits.
8. There is 15 weeks of teacher-student interaction during the semester.
9. The 15 week is divided into 12 weeks teaching and 3 weeks for continuous assessment including preparation time to students during the semester.

10. The workload will be calculated on the basis of 12 weeks teaching only.

### **1.2 Advantages of the choice based credit system:**

1. Shift in focus from the teacher-centric to student-centric education.
2. Student may undertake as many credits as they can cope with (without repeating all courses in a given semester if they fail in one/more courses).
3. CBCS allows students to choose inter-disciplinary, intra-disciplinary courses, skill oriented papers (even from other disciplines according to their learning needs, interests and aptitude) and more flexibility for students.
4. CBCS makes education broad-based and at par with global standards. One can take credits by combining unique combinations. For example, Physics with Economics, Microbiology with Chemistry or Environment Science etc.
5. CBCS offers flexibility for students to study at different times and at different institutions to complete one course (ease mobility of students). Credits earned at one institution can be transferred to another institution.

### **1.3 Implementation of UG course structure:**

1. For First year: Student has to select 4 different subject among the subjects offered by the College /Institute.
2. For Second year: Student has to select 3 different subject among 4 subject chosen in first year
3. For Third year: Student has to select only 1 subject among the 3 subject opted in second year
4. CGPA will be calculated on the basis of core 132 credits only
5. Each theory credit is equivalent to 15 clock hours of teaching and each practical credit is equivalent to 30 clock hours of teaching in a semester.
6. There is 15 weeks of teacher-student interaction during the semester.
7. The 15 week is divided into 12 weeks teaching and 3 weeks for continuous assessment including preparation time to students during the semester.
8. The workload will be calculated on the basis of 12 weeks teaching only.
9. For the purpose of computation of work-load the following mechanism may be adopted as per UGC guidelines:
  - i) 1 Credit = 1 Theory period of one hour fifteen minute duration per week
  - ii) 1 Credit = 1 Tutorial period of one hour fifteen minute duration per week
  - iii) 1 Credit = 1 Practical period of two hour ten minute duration per week
10. Each theory Lecture time for FY,SY,TY is of 50 min. (3 Lectures per week for 2 credit course)
11. Each practical session time for FY is of 3 hour 15 minutes = 195 min
12. Each practical session time for SY & TY is of 4 hour 20 minutes = 260 min
13. Exam pattern: University assessment 70 % and continuous internal assessment 30 %.
14. For Internal examination minimum two tests per paper of which one has to be written test of 10 marks.
15. Methods of assessment for Internal exams: Seminars, Viva-voce, Projects, Surveys, Field visits, Tutorials, Assignment, Group Discussion.

## 2. UG Programme Structure:

**2.1** Each B.Sc. programme is of 3 years duration. The minimum total no. of credits requirement for each programme is 132. In the structure, the credits are distributed over 6 semesters. The open elective included, gives the student a wide choice of subjects from other programmes. The Credit structure for B.Sc. programme is given below in Table 1.

### 1.3 Implementation of UG course structure:

1. For first year: Student has to select 4 different subject among the subjects offered by the College/Institution.
2. For second year: Student has to select 3 different subject among 4 subject chosen in first year.
3. For third year: Student has to select only 1 subject among the 3 subject opted in second year.
4. CGPA will be calculated on the basis of core 132 credits only.
5. Each theory credit is equivalent to 12 clock hours of teaching and each practical credit is equivalent to 30 clock hours of teaching in a semester.
6. There is 12 weeks of teacher-student interaction during the semester.
7. The 12 week is divided into 12 weeks teaching and 3 weeks for continuous assessment including preparation time to students during the semester.
8. The workload will be calculated on the basis of 12 weeks teaching only.
9. For the purpose of computation of work-load the following mechanism may be adopted as per UGC guidelines:
  - (i) Credit = 1 Theory period of one hour fifteen minute duration per week
  - (ii) Credit = 1 Tutorial period of one hour fifteen minute duration per week
  - (iii) Credit = 1 Practical period of two hour ten minute duration per week
10. Each theory/lecture time for FY, 2Y, TY is of 20 min. (3 Lectures per week for 2 credit course)
11. Each practical session time for FY is of 3 hour 15 minutes = 195 min
12. Each practical session time for 2Y & TY is of 4 hour 20 minutes = 260 min
13. Exam pattern: University assessment 30% and continuous internal assessment 30%
14. For internal examination minimum two test per paper of which one has to be written test of 10 marks.
15. Methods of assessment for lateral exam: Seminar, Viva-voce, Project, Field visit, Tutorial, Assignment, Group Discussion.

**Table 1**  
**Savitribai Phule Pune University**  
**Faculty of Science and Technology**  
**Structure of Choice Based Credit System for Undergraduate Science Programme**

Semester	Discipline Specific Core Courses (CC)		Ability Enhancement Compulsory Courses (AECC)		Discipline specific Elective Courses (DSEC)		Skill Enhancement Courses (SEC)		Total Credit
	Course	Theory 1 + Theory 2 + Practical Credit	Course	Theory + Practical Credit	Course	Theory 1 + Theory 2 + Practical Credit	Course	Theory + Practical Credit	
I	CC - I	2 + 2 + 1.5 = 5.5							22
	CC - II	2 + 2 + 1.5 = 5.5							
	CC - III	2 + 2 + 1.5 = 5.5							
	CC - IV	2 + 2 + 1.5 = 5.5							
II	CC - V	2 + 2 + 1.5 = 5.5							22
	CC - VI	2 + 2 + 1.5 = 5.5							
	CC - VII	2 + 2 + 1.5 = 5.5							
	CC - VIII	2 + 2 + 1.5 = 5.5							
III	CC - IX	2 + 2 + 2 = 6	AECC - I (Environment)	2 + 0 = 2					22
	CC - X	2 + 2 + 2 = 6	AECC - II (Language communication)	2 + 0 = 2					
	CC - XI	2 + 2 + 2 = 6							

IV	CC - XII	2 + 2 + 2 = 6	AECC - III (Environment)	2 + 0 = 2					
	CC - XIII	2 + 2 + 2 = 6	AECC - IV (Language communication)	2 + 0 = 2	-	-	-	-	
	CC - XIV	2 + 2 + 2 = 6							22
V					DSEC - I	2 + 2 + 2 = 6	SEC - I	2 + 0 = 2	
					DSEC - II	2 + 2 + 2 = 6	SEC - II	2 + 0 = 2	
					DSEC - III	2 + 2 + 2 = 6	-	-	22
VI					DSEC - IV	2 + 2 + 2 = 6	SEC - III	2 + 0 = 2	
					DSEC - V	2 + 2 + 2 = 6	SEC - IV	2 + 0 = 2	
					DSEC - VI	2 + 2 + 2 = 6	-	-	22
<b>Total Credit</b>									<b>132</b>

## 2.2 Mandatory Credit courses for award of B.Sc. Degree:

In addition to the compulsory credits of 132, the student has to earn additional 8 credits from following groups by taking/participating/conducting respective activities.

**Courses in Group I are compulsory.**

The student can earn **maximum 04 credits from an individual group from Group 2 to Group -9.**

**These extra credits will not be considered for GPA calculation,** however these are mandatory for the completion and award of B. Sc. Degree.

**Group 1:** Physical Education (at F. Y. B. Sc. Sem. I) -01 credit

Physical Education (at F. Y. B. Sc. Sem. II) - 01 credit

(Note: Group I is compulsory for all the students as stated above.)

**Group 2:** Sport representation at College level - 01 credit

Sport representation at University/Statelevel - 02 credits

**Group 3:** National Social Service Scheme (participation in Camp): 01 credits

N.C.C.(with participation in annual camp) -01 credit

N. C. C. (with B certificate/C certificate award)- 02 credits

N.S.S./N.C.C. Republic day parade participation - 04 credits

**Group 4:** Avishkar participation; Extension activity participation, Cultural activity participation -01 credit

Avishkar selection at University level - 02 credits

Avishkar winner at state level - 04 credits

**Group 5:** Research paper presentation at State/National level - 01credits

Research paper presentation at International level - 02 credits

**Group 6:** Participation in Summer school/programme; Short term course (not less than 1-week duration) - 03 credit.

**Group 7:** Scientific Survey, Societal survey, - 02 credits.

**Group 8:** Field Visits; Study Tours; Industrial Visits; Participation in curricular/ cocurricular competitions- 01 Credit.

**Group 9:** Online certificate Courses /MOOC Courses/ Career Advancement Course up to 04 credits (Minimum 10 Hrs. / credit)

## 2.3 Outlines of Choice Based Credit System [Detailed description of the courses]:

- a) **Core Course**(14 for honours courses; 4 discipline specific papers each for regular courses and 2 papers each for English and Hindi/MIL in B.A./B.Com): The papers under this category are going to be taught uniformly across all universities with 30% deviation proposed in the draft. The purpose of fixing core papers is to ensure that all the institutions follow a minimum common curriculum so that each institution/university adheres to common minimum standard. Also the course designed for papers under this category aim to cover the basics that a student is expected to imbibe in that particular discipline. A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.
- b) **Elective Course:** Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.
  - i. **Discipline Specific Elective (DSE) Course**(4 for honours courses and 2 each for regular courses): Elective courses offered under the main discipline/subject of study is referred to as Discipline Specific Elective. The list provided under this category are suggestive in nature and each University has complete freedom to suggest their own papers under this category based on their expertise, specialization, requirements, scope and need. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).
  - ii. **Dissertation/Project\*:** An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.
  - iii. **Generic Elective (GE) Course**(4 for honours courses and 2 each for B.A./B.Com. regular courses): An elective course chosen from an unrelated discipline/subject, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective. The purpose of this category of papers is to offer the students the option to explore disciplines of interest beyond the choices they make in Core and Discipline Specific Elective papers. The list provided under this category are suggestive in nature and each University has complete freedom to suggest their own papers under this category based on their expertise, specialization, requirements, scope and need.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.
- c) **Ability Enhancement Courses (AEC):** The Ability Enhancement (AE) Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC). "AECC" courses are the courses based upon the content that leads to Knowledge enhancement; i. Environmental Science and ii. English/MIL(Marathi/Hindi) Communication. These are mandatory for all disciplines. SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.



- i. **Ability Enhancement Compulsory Courses (AECC):** Environmental Science, English Communication/Hindi Communication/MIL Communication.
- ii. **Skill Enhancement Courses (SEC)**(minimum 2 for honours courses and 4 for regular courses): These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge and should contain both theory and lab/hands-on/training/field work. The main purpose of these courses is to provide students life-skills in hands-on mode so as to increase their employability. The list provided under this category are suggestive in nature and each University has complete freedom to suggest their own papers under this category based on their expertise, specialization, requirements, scope and need.

**d) Practical/tutorials** (One each with every core and discipline/generic specific elective paper): The list of practical provided is suggestive in nature and each university has the freedom to add/subtract/edit practical from the list depending on their faculty and infrastructure available. Addition will however be of similar nature.

**e) Introducing Research Component in Under-Graduate Courses**

**Project work/Dissertation** is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

### **3. Eligibility for Admission:**

#### **3.1 First Year B.Sc.:**

- A. Higher Secondary School Certificate (10+2) or its equivalent Examination with English and three science subjects such as Physics, Chemistry, Mathematics, Biology, Geography, Geology, etc. OR
- B. Three Years Diploma in Pharmacy Course of Board of Technical Education conducted by Government of Maharashtra or its equivalent. OR
- C. Higher Secondary School Certificate (10+2) Examination with English and vocational subject of + 2 level (MCVC) - Medical Lab. Technician (Subject Code = P1/P2/P3)

Admissions will be given as per the selection procedure / policies adopted by the respective college keeping in accordance with conditions laid down by the University of Pune.

Reservation and relaxation will be as per the Government rules.

#### **3.2 Medium of Instruction: English**

#### **3.3 Award of Credits:**

- Each course having 4 credits shall be evaluated out of 100 marks and student should secure at least 40 marks (40%) in continuous assessment as well as term end exam to earn full credits of that course.
- Each course having 3 credits shall be evaluated out of 75 marks as students should secure at least 30 marks (40%) in continuous assessment as well as term end exam to earn full credits of that course.

- Each course having 2 or 1.5 credits shall be evaluated out of 50 marks and student should secure at least 20 marks (40%) in continuous assessment as well as term end exam to earn full credits of that course.
- Each course having 1 credits shall be evaluated out of 25 marks as student shall secure 10 marks (40%) in continuous assessment as well as term end exam to earn full credits of that course.
- GPA shall be calculated based on the marks obtained in the respective subject provided that student should have obtained credits for that course. Structure of marks scheme for choice based credit system program is given in Table 2.



**Table 2**  
**Structure of Examination Mark Scheme of Choice Based Credit System for Undergraduate Science Programme**

Sem	Course opted	Course Name	Credit	Internal Max Marks	External Max Marks	Total Max Marks
I	CC-1	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-1 Practical	Practical	1.5	15	35	50
	CC-2	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-2 Practical	Practical	1.5	15	35	50
	CC-3	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-3 Practical	Practical	1.5	15	35	50
	CC-4	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-4 Practical	Practical	1.5	15	35	50
			<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>
II	CC-5	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-5 Practical	Practical	1.5	15	35	50
	CC-6	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-6 Practical	Practical	1.5	15	35	50
	CC-7	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-7 Practical	Practical	1.5	15	35	50
	CC-8	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-8 Practical	Practical	1.5	15	35	50
			<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>
<b>First Year Total</b>			<b>44</b>	<b>360</b>	<b>840</b>	<b>1200</b>

III	CC-9	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-9 Practical	Practical	2	15	35	50
	CC-10	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-10 Practical	Practical	2	15	35	50
	CC-11	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-11 Practical	Practical	2	15	35	50
	AECC -1A	Environmental Science -1	2	15	35	50
AECC -2A	English MIL(Marathi/Hindi) Communication -1	2	15	35	50	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>
IV	CC-12	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-12 Practical	Practical	2	15	35	50
	CC-13	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-13 Practical	Practical	2	15	35	50
	CC-14	Paper 1:	2	15	35	50
		Paper 2:	2	15	35	50
	CC-14 Practical	Practical	2	15	35	50
	AECC -1B	Environmental Science -2	2	15	35	50
AECC -2B	English MIL(Marathi/Hindi) Communication -2	2	15	35	50	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>
<b>Second Year Total</b>			<b>44</b>	<b>330</b>	<b>770</b>	<b>1100</b>

V	DSE - 1A	Paper 1:	2	15	35	50	
	DSE - 1B	Paper 2:	2	15	35	50	
	DSE - 2A	Paper 3:	2	15	35	50	
	DSE - 2B	Paper 4:	2	15	35	50	
	DSE - 3A	Paper 5:	2	15	35	50	
	DSE - 3B	Paper 6:	2	15	35	50	
	DSE-1	Practical Lab 1	2	15	35	50	
	DSE -2	Practical Lab 2	2	15	35	50	
	DSE -3	Practical Lab 3	2	15	35	50	
	SEC-1	Skill Based Course 1:	2	15	35	50	
	SEC-2	Skill Based Course 2:	2	15	35	50	
				<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>

VI	DSE - 4A	Paper 1:	2	15	35	50
	DSE - 4B	Paper 2:	2	15	35	50
	DSE - 5A	Paper 3:	2	15	35	50
	DSE - 5B	Paper 4:	2	15	35	50
	DSE - 6A	Paper 5:	2	15	35	50
	DSE - 6B	Paper 6:	2	15	35	50
	DSE-4	Practical Lab 1	2	15	35	50
	DSE-5	Practical Lab 2	2	15	35	50
	DSE-6	Project	2	15	35	50
	SEC-2	Skill Based Course 2	2	15	35	50
SEC-2	Skill Based Course 2	2	15	35	50	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>
<b>Third Year Total</b>			<b>44</b>	<b>330</b>	<b>770</b>	<b>1100</b>
<b>Total</b>			<b>132</b>			<b>3400</b>

#### 4. Evaluation Pattern:

- 4.1 The course carrying 100 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism.
- 4.2 Continuous assessment shall be of 30 marks while University Evaluation shall be of 70 marks. To pass in a course of 4 credit, a student has to secure minimum 40 marks provided that he should secure minimum 28 marks in University Evaluation (UE) and 12 marks (40%) in continuous assessment.
- 4.3 The course carrying 50 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism. Continuous assessment shall be of 15 marks while University Evaluation shall be of 35 marks.
- 4.4 To pass in a course of 2 or 1.5 credit, a student has to secure minimum 20 marks provided that he/she should secure minimum 14 marks in University Evaluation (UE) and 6 marks (40%) in continuous assessment..
- 4.5 For Internal examination minimum two tests per paper of which one has to be a written test 10 Marks
- 4.6 Methods of assessment for Internal exams: Seminars, Viva-voce, Projects, Surveys, Field visits, Tutorials, Assignment, Group Discussion, etc (on approval of the head of the centre)
- 4.7 There shall be revaluation of the answer scripts of semester-end examination of theory papers only but not of internal assessment papers as per Ordinance no 134 A and B.

#### 5. ATKT Rules:

- 5.1 Minimum number of credits required to take admission to Second Year of B. Sc.: 31 [70%]
- 5.2 Minimum number of credits required to take admission to Third Year of B.Sc.: 44 credits [100%] to be completed from F.Y. B.Sc. and at least 22 credits from S.Y. B.Sc.

#### 6. Completion of Degree Course:

- 6.1 A student who earns 140 credits, shall be considered to have completed the requirements of the B. Sc. degree program and CGPA will be calculated for such student. On the basis of only 132 credits. The following percentage to grade and grade point is given in Table-3 and respective example of CGPA calculation is given in Table-4.

**Table 3**  
**Percentage to Grades and Grade Points**

Sr. No.	Grade Letter	Grade Point	Marks
1	O (Outstanding)	10	90 ≤ Marks ≤ 100
2	A+ (Excellent)	9	80 ≤ Marks ≤ 89
3	A (Very Good)	8	70 ≤ Marks ≤ 79
4	B+ (Good)	7	55 ≤ Marks ≤ 69
5	B (Above Average)	6	50 ≤ Marks ≤ 54
6	C (Average)	5	45 ≤ Marks ≤ 49
7	D (Pass)	4	40 ≤ Marks ≤ 44
8	F (Fail)	0	Marks < 40
9	Ab (Absent)	0	

**Table 4**  
**Structure of CGPA and Mark Scheme of Choice Based Credit**  
**System for Undergraduate Science Programme to be**  
**implemented from Academic year 2019-20**

Se m	Course opted	Course Name	Cre dit	Interna l Max Marks	Extern al Max Marks	Total Max Marks	Grade Letter (F-O)	Grade point (0 - 10)	Credit Point = (Credit x Grade point)
I	CC-1	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-1 Practical	Practical	1.5	15	35	50	A	8	12.00
	CC-2	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-2 Practical	Practical	1.5	15	35	50	C	5	7.50
	CC-3	Paper 1:	2	15	35	50	D	4	8.00
		Paper 2:	2	15	35	50	A	8	16.00
	CC-3 Practical	Practical	1.5	15	35	50	D	4	6.00
	CC-4	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-4 Practical	Practical	1.5	15	35	50	A	8	12.00
			<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>			<b>163.50</b>
<b>SGPA</b>						Total Credit point / Total credit for the semester			<b>7.43</b>
II	CC-5	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-5 Practical	Practical	1.5	15	35	50	A	8	12.00
	CC-6	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-6 Practical	Practical	1.5	15	35	50	C	5	7.50
	CC-7	Paper 1:	2	15	35	50	D	4	8.00
		Paper 2:	2	15	35	50	C	5	10.00
	CC-7 Practical	Practical	1.5	15	35	50	B	6	9.00
	CC-8	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-8 Practical	Practical	1.5	15	35	50	A	8	12.00
			<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>	<b>0</b>		<b>160.50</b>
<b>SGPA</b>						Total Credit point / Total credit for the semester			<b>7.30</b>
<b>First Year Total</b>			<b>44</b>	<b>360</b>	<b>840</b>	<b>1200</b>			<b>323.50</b>
<b>SGPA</b>						Total Credit point / Total credit for the year			<b>7.35</b>

III	CC-9	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-9 Practical	Practical	2	15	35	50	A	8	16.00
	CC-10	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-10 Practical	Practical	2	15	35	50	C	5	10.00
	CC-11	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-11 Practical	Practical	2	15	35	50	C	5	10.00
	AECC -1A	Environmental Science - 1	2	15	35	50	B	6	12.00
AECC -2A	English MIL(Marathi/Hindi) Communication -1	2	15	35	50	A	8	16.00	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>			<b>154.00</b>
<b>SGPA</b>						Total Credit point / Total credit for the semester			<b>7.00</b>

IV	CC-12	Paper 1:	2	15	35	50	O	10	20.00
		Paper 2:	2	15	35	50	A+	9	18.00
	CC-12 Practical	Practical	2	15	35	50	A	8	16.00
	CC-13	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-13 Practical	Practical	2	15	35	50	C	5	10.00
	CC-14	Paper 1:	2	15	35	50	B+	7	14.00
		Paper 2:	2	15	35	50	B	6	12.00
	CC-14 Practical	Practical	2	15	35	50	C	5	10.00
	AECC -1B	Environmental Science - 2	2	15	35	50	D	4	8.00
AECC -2B	English/ MIL(Marathi/Hindi) Communication -2	2	15	35	50	C	5	10.00	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>			<b>144.00</b>
<b>SGPA</b>						Total Credit point / Total credit for the semester			<b>6.55</b>
<b>Second Year Total</b>			<b>44</b>	<b>330</b>	<b>770</b>	<b>1100</b>			<b>298.00</b>



SGPA						Total Credit point / Total credit for the year			6.77
V	DSE - 1A	Paper 1:	2	15	35	50	D	4	8.00
	DSE - 1B	Paper 2:	2	15	35	50	C	5	10.00
	DSE - 2A	Paper 3:	2	15	35	50	D	4	8.00
	DSE - 2B	Paper 4:	2	15	35	50	C	5	10.00
	DSE - 3A	Paper 5:	2	15	35	50	D	4	8.00
	DSE - 3B	Paper 6:	2	15	35	50	C	5	10.00
	DSE-1	Practical Lab 1	2	15	35	50	O	10	20.00
	DSE-2	Practical Lab 2	2	15	35	50	A+	9	18.00
	DSE-3	Practical Lab 3	2	15	35	50	A	8	16.00
	SEC-1	Skill Based Course 1:	2	15	35	50	D	4	8.00
SEC-2	Skill Based Course 2:	2	15	35	50	C	5	10.00	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>			<b>126.00</b>
SGPA						Total Credit point / Total credit for the semester			5.73
VI	DSE - 4A	Paper 1:	2	15	35	50	D	4	8.00
	DSE - 4B	Paper 2:	2	15	35	50	C	5	10.00
	DSE - 5A	Paper 3:	2	15	35	50	D	4	8.00
	DSE - 5B	Paper 4:	2	15	35	50	C	5	10.00
	DSE - 6A	Paper 5:	2	15	35	50	D	4	8.00
	DSE - 6B	Paper 6:	2	15	35	50	C	5	10.00
	DSE-4	Practical Lab 1	2	15	35	50	O	10	20.00
	DSE-5	Practical Lab 2	2	15	35	50	A+	9	18.00
	DSE-6	Project	2	15	35	50	A	8	16.00
	SEC-2	Skill Based Course 2	2	15	35	50	D	4	8.00
SEC-2	Skill Based Course 2	2	15	35	50	C	5	10.00	
			<b>22</b>	<b>165</b>	<b>385</b>	<b>550</b>			<b>126.00</b>
SGPA						Total Credit point / Total credit for the semester			5.73
<b>Third Year Total</b>			<b>44</b>	<b>330</b>	<b>770</b>	<b>1100</b>			<b>252.00</b>
SGPA						Total Credit point / Total credit for the year			5.73
<b>Total</b>			<b>132</b>			<b>3400</b>			<b>873.50</b>
CGPA						Total Credit point / Total credit for the course			6.62

## 7. PERFORMANCE INDICES:

The semester end grade sheet will contain grades for the courses along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.

**7.1 Semester Grade Point Average (SGPA)** -The performance of a student in a semester is indicated by a number called the Semester Grade Point Average (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses, seminars and projects registered by the student during the semester.

$$SGPA = \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i}$$

$$SGPA = \frac{\sum \text{Grade Points Earned} \times \text{Credits for each course}}{\text{Total Credits}}$$

For Example: suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively.

Then students

$$SGPA = \frac{C_1 G_1 + C_2 G_2 + C_3 G_3 + C_4 G_4 + C_5 G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

SGPA is calculated up to two decimal places by rounding off.

**7.2 Course Grade Point Average (CGPA)**- The CGPA is the weighted average of the grade points obtained in all the courses (Theory/term work/practical/oral/presentation) of first semester to sixth semester for the students admitted in the First year and third to sixth semester for the students directly admitted at Second year. It is calculated in the same manner as the SGPA.

In case of a student passing a failed course or in case of improvement, the earlier grade would be replaced by the new grade in calculation of the SGPA and CGPA.

## 8. RESULT:

Based on the performance of the student in the semester examinations, the Savitribai Phule Pune University will declare the results and issue the Semester Grade sheets.

The class shall be awarded to a student on the CGPA calculated as mentioned in Rule no. 6.1. The award of the class shall be as per Table 5. and corresponding percentage calculation for the CGPA is given in Table 6. along with all details and examples.

**Table 5**  
**CGPA distribution and corresponding class of the degree awarded**

Sr. No	CGPA	Class of the Degree awarded
1	9.50 or More than 9.50	Outstanding (O)
2	8.50 or more but less than 9.50	Excellent (A+)
3	7.50 or more but less than 8.50	Very Good (A)
4	6.25 or more but less than 7.50	Good (B+)
5	5.25 or more but less than 6.25	Above Average (B)
6	4.75 or more but less than 5.25	Average (C)
7	4.00 or more but less than 4.75	Pass (D)

**Table 6**  
**Percentage calculation of a corresponding CGPA**

For the calculation of Percentage from CGPA following equation can be used.

$$\% \text{ of Marks} = \begin{cases} \text{if O grade then } 20 \times \text{CGPA} - 100 \\ \text{if A+ grade then } 10 \times \text{CGPA} - 5 \\ \text{if A grade then } 10 \times \text{CGPA} - 5 \\ \text{if B+ grade then } 12 \times \text{CGPA} - 20 \\ \text{if B grade then } 5 \times \text{CGPA} + 23.75 \\ \text{if C grade then } 10 \times \text{CGPA} - 2.50 \\ \text{if D grade then } 6.6 \times \text{CGPA} + 13.6 \end{cases}$$

The factor considered in the above equations are evaluated from the grade point and marks distribution given in Table 3. The examples of the calculation of percentage are given in the Table 7.

**Table 7**  
**Some examples of CGPA to percentage calculations**

Obtained CGPA	Equation	Percentage (%)	Grade
10	$20 \times 10 - 100 = 100$	100	O
9.75	$20 \times 9.75 - 100 = 95$	95	O
9.5	$20 \times 9.5 - 100 = 90$	90	O
9.0	$10 \times 9 - 5 = 85$	85	A+
8.0	$10 \times 8 - 5 = 75$	75	A
7.0	$12 \times 7 - 20 = 64$	64	B+
6.67	$12 \times 6.67 - 20 = 60.04$	60.04	B+
6.25	$12 \times 6.25 - 20 = 55$	55	B+
5.25	$5 \times 5.25 + 23.75 = 50$	50	B
4.75	$10 \times 4.75 - 2.50 = 45$	45	C
4.0	$6.6 \times 4.0 + 13.6 = 40$	40	D

While declaring the result, the existing relevant ordinances are applicable. There is also a provision for verification and revaluation. In case of verification, the existing rules will be applicable. The revaluation result will be adopted if there is a change of at least 10% marks and in the grade of the course.

For grade improvement a student will have to take minimum 30% of the requisite number of credits for the concerned degree. These courses will be theory courses from the parent department. Grade improvement programme will be implemented at the end of the academic year. A student can opt for the grade improvement programme only after the declaration of the result for his/her final semester exam, i.e., at the end of the next academic year after passing the final examination and within two years of completion of the degree and only once.

Excellent (A+)	8.50 or more but less than 9.50
Very Good (A)	7.50 or more but less than 8.50
Good (B+)	6.50 or more but less than 7.50
Above Average (B)	5.50 or more but less than 6.50
Average (C)	4.50 or more but less than 5.50
Pass (D)	4.00 or more but less than 4.50

Table 6

Percentage calculation of a corresponding CGPA

For the calculation of Percentage from CGPA following equation can be used

$$\% \text{ of Marks} = \begin{cases} \text{If O grade then } 50 \times \text{CGPA} - 100 \\ \text{If A+ grade then } 40 \times \text{CGPA} - 5 \\ \text{If A grade then } 30 \times \text{CGPA} - 5 \\ \text{If B+ grade then } 20 \times \text{CGPA} - 10 \\ \text{If B grade then } 10 \times \text{CGPA} + 23.75 \\ \text{If C grade then } 10 \times \text{CGPA} - 2.50 \\ \text{If D grade then } 6.8 \times \text{CGPA} + 13.6 \end{cases}$$

The factor considered in the above equation are evaluated from the grade point and marks distribution given in Table 5. The examples of the calculation of percentage are given in the Table 7.

Table 7

Some examples of CGPA to percentage calculation

Grade	Percentage (%)	Equation	Obtained CGPA
O	100	$50 \times 10 - 100 = 400$	10
O	95	$50 \times 9.5 - 100 = 375$	9.75
O	90	$50 \times 9 - 100 = 350$	9.2
A+	85	$40 \times 9.5 - 5 = 380$	9.0
A	75	$40 \times 8.5 - 5 = 340$	8.0
B+	64	$30 \times 7.0 - 5 = 215$	7.0
B+	60.04	$30 \times 6.7 - 5 = 206$	6.67
B+	55	$30 \times 5.5 - 5 = 165$	6.15
B	50	$30 \times 4.5 - 5 = 135$	5.15
C	45	$30 \times 3.5 - 5 = 105$	4.75
D	40	$10 \times 4.0 - 2.50 = 37.5$	4.0

While declaring the result, the existing relevant ordinances are applicable. There is also a provision for verification and revaluation in case of verification, the existing rules are applicable. The revaluation result will be adopted if there is a change of at least 10% and in the grade of the course.

F. Y. B.Sc. (Computer Science)

Semester-I

Lab Course – I & II

Work Book

Name: \_\_\_\_\_

College Name: \_\_\_\_\_

Roll No.: \_\_\_\_\_ Division: \_\_\_\_\_

Academic Year: \_\_\_\_\_



Savitribai Phule Pune University

## Section-I

F. Y. B.Sc. (Computer Science)

SEMESTER I

Lab Course – I

C Programming

## **Introduction**

### **1. About the work book:**

This workbook is intended to be used by F.Y.B.Sc. (Computer Science) students for the C and RDBMS Assignments in Semester-I. This workbook is designed by considering all the practical concepts / topics mentioned in syllabus.

### **2. The objectives of this workbook are:**

- 1) Defining the scope of the course.
- 2) To bring the uniformity in the practical conduction and implementation in all colleges affiliated to SPPU.
- 3) To have continuous assessment of the course and students.
- 4) Providing ready reference for the students during practical implementation.
- 5) Provide more options to students so that they can have good practice before facing the examination.
- 6) Catering to the demand of slow and fast learners and accordingly providing the practice assignments to them.

### **3. How to use this workbook:**

The workbook is divided into two sections. Section-I is related to C programming and Section-II is related to Introduction to Relational Database Management System.

The Section-I (C programming) is divided into Eleven assignments. Each C assignment has three SETs. It is mandatory for students to complete the SET A and SET B in given slot.

The Section-II (Relational database Management System) is divided into fourteen assignments. Each assignment has three SETs. It is mandatory for students to complete SET A and SET B in given slot.

## **Instructions to the students**

Please read the following instructions carefully and follow them.

- 1) Students are expected to carry this book every time they come to the lab for computer science practical.
- 2) Students should prepare oneself beforehand for the Assignment by reading the relevant material.
- 3) Instructor will specify which problems to solve in the lab during the allotted slot and student should complete them and get verified by the instructor. However student should spend additional hours in Lab and at home to cover as many problems as possible given in this work book.

4) Students will be assessed for each exercise on a scale from 0 to 5.

Not done	0
Incomplete	1
Late Complete	2
Needs improvement	3
Complete	4
Well Done	5

### **Instruction to the Instructors**

- 1) Explain the assignment and related concepts in around ten minutes using whiteboard if required or by demonstrating the software.
- 2) You should evaluate each assignment carried out by a student on a scale of 5 as specified above by ticking appropriate box.
- 3) The value should also be entered on assignment completion page of the respective Lab course.

### **Instructions to the Lab Administrator**

You have to ensure appropriate hardware and software is made available to each student.

The operating system and software requirements on server side and also client side areas given below:

- 1) Server and Client Side - ( Operating System ) Linux/Windows
- 2) Database server – PostgreSQL
- 3) Turbo C.



## Assignment Completion Sheet

Lab Course I			
C Programming			
Sr. No.	Assignment Name	Marks (out of 5)	Teachers Sign
1	Testing the Errors		
2	Use of data types, simple operators (expressions)		
3	Use of decision making statements (if and if-else, nested structures)		
4	Use of decision making statements (switch case)		
5	Use of simple loops		
6	Use of nested loops		
7	Use of standard library functions and menu driven programs		
8	Use of user defined functions)		
9	Use of recursive functions.		
10	Use of arrays (1-d arrays ) and functions		
11	Use of multidimensional array(2-d arrays ) and functions		
Total ( Out of 50 )			
Total (Out of 08)			

This is to certify that Mr./Ms. \_\_\_\_\_  
Has successfully completed the C programming course work Lab  
Course-I and has scored \_\_\_ Marks out of 08.

Instructor  
Coordinator

H.O.D. /

Internal Examiner

External Examiner

## Exercise 1

Start Date

/ /

### Testing the errors

Testing is a process of finding bugs or error in a c program.

Find errors if any in the following program. Justify your answer

```
1. #include<stdio.h>
void main()
{
    int x;
    printf("Enter the value of x");
    scanf("%d",x);
}
```

---

---

```
2. #include<stdio.h>
void main()
{
    printf("hello")
}
```

---

---

```
3. #include<stdio.h>
void Main()
{
    int a = 10;
    printf("%d", a);
}
```

---

---

```
4. void main()
{
    int a, b, c;
    a + b = c;
}
```

---

---

```
5. #include<stdio.h>
void main()
{
    while(.)
    {
        printf("hello");
    }
}
```

---

---

**Assignment Evaluation**

0: Not done

1: Incomplete

2: Late Complete

3: Needs improvement

**Signature**

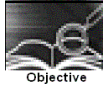
4: Complete

5: Well Done

## Exercise 2

Start Date

/ /



**To demonstrate the use of data types, simple operators and expressions**



You should read following topics before starting this exercise

1. Different basic data types in C and rules of declaring variables in C
2. Different operators and operator symbols in C
3. How to construct expressions in C, operator precedence
4. Problem solving steps- writing algorithms and flowcharts



1. Data type Table

Data	Data Format	C Data Type	C Variable declaration	Input Statement	Output statement
quantity month credit-card number	Numeric	int Short int long int	int quantity; short month; long ccno;	scanf("%d",&quantity); scanf("%d",&month); scanf("%ld", &ccno);	printf("The quantity is %d", quantity); printf("The credit card number is %ld, ccno);
price $\pi$	real	float double	float price; const double pi=3.141593;	scanf("%f",&price);	printf("The price is %5.2f", price);
grade	character		char grade;	scanf("%c",&grade)	printf("The grade is %c",grade);

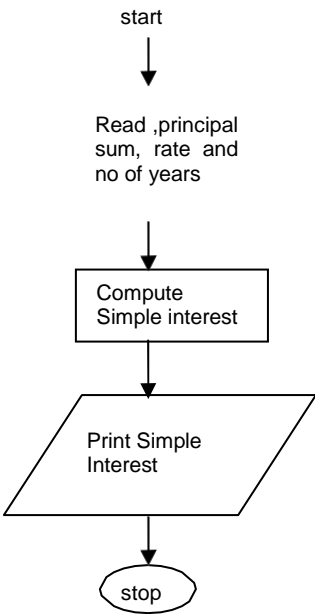
2. Expression Examples

Expression	C expression
Increment by a 3	a = a + 3
Decrement b by 1	b = b-1 or b--
$2a^2 + 5b/2$	2*a*a + 5*b/2
$7/13(x-5)$	(float)7/13*(x-5)
5% of 56	(float)5/100*56
n is between 12 to 70	n>=12 && n<=70
$\pi r^2 h$	Pi*r*r*h
n is not divisible by 7	n % 7 != 0
n is even	n%2== 0
ch is an alphabet	ch>='A' && ch<='Z'    ch>='a' && ch<='z'

Note: The operators in the above expressions will be executed according to precedence and associativity rules of operators.

3. Sample program- to calculate and print simple interest after accepting principal sum, number of years and rate of interest.

## Program development steps

Step 1 : Writing the Algorithm	Step 2 : Draw the flowchart	Step 3 : Writing Program
<ol style="list-style-type: none"> <li>1. Start</li> <li>2. Accept principal sum, rate of interest and number of years</li> <li>3. Compute Simple interest</li> <li>4. Output Simple Interest</li> <li>5. Stop</li> </ol>	 <pre> graph TD     Start([start]) --&gt; Read[Read ,principal sum, rate and no of years]     Read --&gt; Compute[Compute Simple interest]     Compute --&gt; Print[/Print Simple Interest/]     Print --&gt; Stop([stop])     </pre>	<pre> /* Program to calculate simple interest */ #include &lt;stdio.h&gt; main( ) { /* variable declarations */ float amount, rateOfInterest, simpleInterest; int noOfYears; /* prompting and accepting input */ printf("Give the Principal Sum"); scanf("%f",&amp;amount); printf("Give the Rate of Interest"); scanf("%f",&amp;rateOfInterest); printf("Give the Number of years"); scanf("%d",&amp;noOfYears);  /* Compute the simple Interest*/ simpleInterest=amount*noOfYears*rateOfInterest / 100;  /* Print the result*/ printf("The simple Interest on amount %7.2f for %d years at the rate %4.2f is %6.2f", amount, noOfYears, rateOfInterest, simpleInterest); }     </pre>



1. Type the sample program given above. Execute it for the different values as given below and fill the last column from the output given by the program. Follow the following guidelines
  - a. At \$ prompt type vi followed by filename. The filename should have .c as extension for example  
\$vi pnr.c
  - b. Type the sample program given above using vi commands and save it  
Compile the program using cc compiler available in Linux  
\$cc pnr.c  
It will give errors if any or it will give back the \$ prompt if there are no errors  
A executable file a.out is created by the compiler in current directory. The program can be executed by typing name of the file as follows giving the path.  
\$ ./a.out  
Alternatively the executable file can be given name by using -o option while compiling as follows  
\$cc pnr.c -o pnrexec  
\$./pnrexec  
The executable file by specified name will be created. Note that you have to specify the path of pnrexec as ./pnrexec , i. e., pnrexec in current (. Stands for current directory) directory otherwise it looks for program by that name in the path specified for executable programs

Sr. No	Principal sum	No of years	Rate of interest	Simple Interest
1	2000	3		
2	4500	_____	4.5	
3	_____	6	8.3	

2. If you have not typed the program correctly, i.e., if there are syntactical errors in the program, compiler will pinpoint the errors committed and are called compile-time errors. C compiler gives line no along with error messages when it detects grammatical or syntactical errors in the program. These messages are not so straightforward and you may find it difficult to identify the error. You may miss a semicolon at the end of a statement and the compiler points out error in the next statement. You may miss just a closing `*/` of a comment and it will show errors in several statements following it.
- Another type of error which is quite common is the run-time or execution error. You are able to compile the program successfully but you get run-time messages or garbage output when you execute the program.
- Modify the above program to introduce the following changes, compile, write the error messages along with line numbers, remove the error execute and indicate the type of error whether it was compile-time or execution time error.

Modified line	Error messages and line numbers	Type of error
<code>/* Program to calculate simple interest</code>		
<code>int noofYears;</code>		
<code>scanf("%f",&amp;amount)</code>		
<code>scanf("%f", amount);</code>		
<code>scanf("%d", noOfYears);</code>		

Signature of the instructor

Date  /  /



**Set A . Apply all the three program development steps for the following examples.**

1. Accept dimensions of a cylinder and print the surface area and volume (Hint: surface area =  $2\pi r^2 + 2\pi rh$ , volume =  $\pi r^2 h$ )
2. Accept temperatures in Fahrenheit (F) and print it in Celsius (C) and Kelvin (K) (Hint:  $C = 5/9(F - 32)$ ,  $K = C + 273.15$ )
3. Accept initial velocity (u), acceleration (a) and time (t). Print the final velocity (v) and the distance (s) travelled. (Hint:  $v = u + at$ ,  $s = u + at^2$ )
4. Accept inner and outer radius of a ring and print the perimeter and area of the ring (Hint: perimeter =  $2\pi(a+b)$ , area =  $\pi(a^2 - b^2)$ )
5. Accept two numbers and print arithmetic and harmonic mean of the two numbers (Hint:  $AM = (a+b)/2$ ,  $HM = ab/(a+b)$ )
6. Accept three dimensions length (l), breadth (b) and height (h) of a cuboid and print surface area and volume (Hint: surface area =  $2(lb + lh + bh)$ , volume =  $lbh$ )
7. Accept a character from the keyboard and display its previous and next character in order. Ex. If the character entered is 'd', display "The previous character is c", "The next character is e".
8. Accept a character from the user and display its ASCII value.

Signature of the instructor

Date  /  /

**Set B . Apply all the three program development steps for the following examples.**

1. Accept the x and y coordinates of two points and compute the distance between the two points.
2. Accept two integers from the user and interchange them. Display the interchanged numbers.
3. A cashier has currency notes of denomination 1, 5 and 10. Accept the amount to be withdrawn from the user and print the total number of currency notes of each denomination the cashier will have to give.

Signature of the instructor

Date

**Set C. Write a program to solve the following problems**

1. Consider a room having one door and two windows both of the same size. Accept dimensions of the room, door and window. Print the area to be painted (interior walls) and area to be whitewashed (roof).
2. The basic salary of an employee is decided at the time of employment, which may be different for different employees. Apart from basic, employee gets 10% of basic as house rent, 30% of basic as dearness allowance. A professional tax of 5% of basic is deducted from salary. Accept the employee id and basic salary for an employee and output the take home salary of the employee.

Signature of the instructor

Date

**Assignment Evaluation**

**Signature**

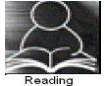
0: Not done	<input type="text"/>	2: Late Complete	<input type="text"/>	4: Complete	<input type="text"/>
1: Incomplete	<input type="text"/>	3: Needs improvement	<input type="text"/>	5: Well Done	<input type="text"/>

### Exercise 3

Start Date / /



**To demonstrate use of decision making statements such as if and if-else.**



You should read following topics before starting this exercise

1. Different types of decision-making statements available in C.
2. Syntax for these statements.



During problem solving, we come across situations when we have to choose one of the alternative paths depending upon the result of some condition. Condition is an expression evaluating to true or false. This is known as the Branching or decision-making statement. Several forms of If and else constructs are used in C to support decision-making.

- 1) if statements
- 2) if – else
- 3) Nested if

Note: If there are more than one statement in the if or else part, they have to be enclosed in { } braces

Sr. No	Statement Syntax	Flowchart	Example
1.	<b>if statement</b>  if (condition) { statement; }		<pre>if( n &gt; 0)   printf("Number   is positive");</pre>
2.	<b>if - else statement</b>  if (condition) { statement; } else { statement; }		<pre>if( n % 2 == 0)   printf("Even"); else   printf("Odd");</pre>



3.	<p><b>Nested if</b></p> <pre> if (condition) {   if (condition)   { statement;} else { statement;} } else {   if (condition)   { statement; } else { statement; } } </pre>	<pre> graph TD     Start(( )) --&gt; D1{a &gt;= b}     D1 -- True --&gt; AMax[a is max]     D1 -- False --&gt; D2{b &gt;= c}     D2 -- True --&gt; BMax[b is max]     D2 -- False --&gt; D3{a &gt;= c}     D3 -- True --&gt; AMax     D3 -- False --&gt; CMax[c is max]     AMax --&gt; End(( ))     BMax --&gt; End     CMax --&gt; End </pre>	<pre> If ( a &gt;= b) { if ( a &gt;= c)   printf(" %d is maximum",a); else printf(" %d is maximum",c); } else {   if ( b &gt;= c)   printf(" %d is maximum",b); else printf(" %d is maximum",c); } </pre>
----	--	---	---

4. Sample program- to check whether a number is within range.

Step 1: Writing the Algorithm	Step 2 : Draw the flowchart	Step 3 : Writing Program
<ol style="list-style-type: none"> <li>1. Start</li> <li>2. Accept the number</li> <li>3. Check if number is within range</li> <li>4. if true print "Number is within range"</li> <li>   " otherwise    print "number is out of range".</li> <li>5. Stop</li> </ol>	<pre> graph TD     Start([start]) --&gt; Read[/Read number/]     Read --&gt; D{If(n in range)}     D -- True --&gt; W[/Number is within range/]     D -- False --&gt; O[/Number is out of range/]     W --&gt; Stop([stop])     O --&gt; Stop </pre>	<pre> /* Program to check range */  #include &lt;stdio.h&gt; main ( ) { /* variable declarations */   int n;   int llimit=50, ulimit = 100;   /* prompting and accepting input */   printf("Enter the number");   scanf("%d",&amp;n);   if(n&gt;=llimit &amp;&amp; n &lt;= ulimit)     printf("Number is within range");   else     printf("Number is out of range"); } </pre>



1. Execute the following program for five different values and fill in the adjoining table

<pre>main() { int n; printf("Enter no."); scanf("%d",&amp;n); if(n%__==0) printf("divisible"); else printf("not divisible"); }</pre>	n	output

2. Type the above sample program 4 and execute it for the following values.

n	Output message
50	
100	
65	

3. Using the sample code 3 above write the complete program to find the maximum of three numbers and execute it for different set of values.

Instructor should fill in the blanks with appropriate values.

Signature of the instructor

Date  /  /



**Set A: Apply all the three program development steps for the following examples.**

- Write a program to accept an integer and check if it is even or odd.
- Write a program to accept three numbers and check whether the first is between the other two numbers. Ex: Input 20 10 30. Output: 20 is between 10 and 30
- Accept a character as input and check whether the character is a digit. (Check if it is in the range '0' to '9' both inclusive)
- Write a program to accept a number and check if it is divisible by 5 and 7.
- Write a program, which accepts annual basic salary of an employee and calculates and displays the Income tax as per the following rules.

Basic: < 1,50,000                      Tax = 0  
 1,50,000 to 3,00,000              Tax = 20%  
 > 3,00,000                            Tax = 30%

- Accept a lowercase character from the user and check whether the character is a vowel or consonant. (Hint: a,e,i,o,u are vowels)

Signature of the instructor

Date  /  /

**Set B: Apply all the three program development steps for the following examples.**

1. Write a program to check whether given character is a digit or a character in lowercase or uppercase alphabet. (Hint ASCII value of digit is between 48 to 57 and Lowercase characters have ASCII values in the range of 97 to 122, uppercase is between 65 and 90)
2. Accept the time as hour, minute and seconds and check whether the time is valid. (Hint:  $0 \leq \text{hour} < 24$ ,  $0 \leq \text{minute} < 60$ ,  $0 \leq \text{second} < 60$ )
3. Accept any year as input through the keyboard. Write a program to check whether the year is a leap year or not. (Hint leap year is divisible by 4 and not by 100 or divisible by 400)
4. Accept three sides of triangle as input, and print whether the triangle is valid or not. (Hint: The triangle is valid if the sum of each of the two sides is greater than the third side).
5. Accept the x and y coordinate of a point and find the quadrant in which the point lies.
6. Write a program to calculate the roots of a quadratic equation. Consider all possible cases.
7. Accept the cost price and selling price from the keyboard. Find out if the seller has made a profit or loss and display how much profit or loss has been made.

Signature of the instructor

Date  /  /

**Set C: Write programs to solve the following problems**

1. Write a program to accept marks for three subjects and find the total marks secured, average and also display the class obtained. (Class I – above \_\_%, class II – \_\_% to \_\_%, pass class – \_\_% to \_\_% and fail otherwise)
2. Write a program to accept quantity and rate for three items, compute the total sales amount, Also compute and print the discount as follows: (amount > \_\_20% discount, amount between \_\_ to \_\_ 15% discount, amount between – \_\_ to \_\_ 8% discount)
3. A library charges a fine for every book returned late. Accept the number of days the member is late, compute and print the fine as follows: (less than five days Rs \_\_ fine, for 6 to 10 days Rs. \_\_ fine and above 10 days Rs. \_\_ fine )

Instructor should fill in the blanks with appropriate values.

Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

0: Not done

2: Late Complete

4: Complete

1: Incomplete

3: Needs improvement

5: Well Done

**Exercise 4**

**Start Date** / /



**To demonstrate decision making statements (switch case)**



You should read following topics before starting this exercise

1. Different types of decision-making statements available in C.
2. Syntax for switch case statements.



The control statement that allows us to make a decision from the number of choices is called a switch-case statement. It is a multi-way decision making statement.

**1. Usage of switch statement**

Statement Syntax	Flowchart	Example
<pre> switch(expression) { case value1: block1;             break; case value2: block2;             break; . . . default : default block;             break; }                     </pre>	<pre> graph TD     Start([start]) --&gt; Case1{case 1}     Case1 -- True --&gt; Block1[Block 1]     Case1 -- False --&gt; Case2{case 2}     Case2 -- True --&gt; Block2[Block 2]     Case2 -- False --&gt; Case3{case 3}     Case3 -- True --&gt; Block3[Block 3]     Case3 -- False --&gt; Case4{case 4}     Case4 -- True --&gt; Block4[Block 4]     Case4 -- False --&gt; Default[Default Block]     Block1 --&gt; Stop([stop])     Block2 --&gt; Stop     Block3 --&gt; Stop     Block4 --&gt; Stop     Default --&gt; Stop                     </pre>	<pre> switch (color) { case 'r' : case 'R' : printf ("RED"); break; case 'g' : case 'G' : printf ("GREEN"); break; case 'b' : case 'B' : printf ("BLUE"); break; default : printf ("INVALID COLOR"); }                     </pre>

2. The switch statement is used in writing menu driven programs where a menu displays several options and the user gives the choice by typing a character or number. A Sample program to display the selected option from a menu is given below.

Step 1: Writing the Algorithm	Step 2: Draw the flowchart	Step 3: Writing Program
1. Start 2. Display the menu options 3. Read choice 4. Execute statement block depending on choice 5. Stop		<pre> /* Program using switch case and menu */  #include &lt;stdio.h&gt; main( ) { /* variable declarations */   int choice;   /* Displaying the Menu */   printf("\n 1. Option 1\n");   printf(" 2. Option 2\n");   printf(" 3. Option 3\n");   printf("Enter your choice");   scanf("%d",&amp;choice);   switch(choice)   {     case 1:       printf("Option 1 is selected");       break;     case 2:       printf("Option 2 is selected");       break;     case 3:       printf("Option 3 is selected");       break;     default:       printf("Invalid choice");   } } </pre>



1. Write the program that accepts a char-type variable called color and displays appropriate message using the sample code 1 above. Execute the program for various character values and fill in the following table. Modify the program to include all rainbow colours

Input character	Output Message
V	
I	
B	
G	
R	

Signature of the instructor

Date  /  /



**Set A: Apply all the three program development steps for the following examples.**

1. Accept a single digit from the user and display it in words. For example, if digit entered is 9, display Nine.
2. Write a program, which accepts two integers and an operator as a character (+ - \* /), performs the corresponding operation and displays the result.
3. Accept two numbers in variables x and y from the user and perform the following operations

Options	Actions
1. Equality	Check if x is equal to y
2. Less Than	Check if x is less than y
3. Quotient and Remainder	Divide x by y and display the quotient and remainder
4. Range	Accept a number and check if it lies between x and y (both inclusive)
5. Swap	Interchange x and y

Signature of the instructor

Date  /  /

**Set B: Apply all the three program development steps for the following examples.**

1. Accept radius from the user and write a program having menu with the following options and corresponding actions

Options	Actions
1. Area of Circle	Compute area of circle and print
2. Circumference of Circle	Compute Circumference of circle and print
3. Volume of Sphere	Compute Volume of Sphere and print

2. Write a program having a menu with the following options and corresponding actions

Options	Actions
1. Area of square	Accept length ,Compute area of square and print
2. Area of Rectangle	Accept length and breadth, Compute area of rectangle and print
3. Area of triangle	Accept base and height , Compute area of triangle and print

Signature of the instructor

Date  /  /

**Set C: Write a program to solve the following problems**

1. Accept the three positive integers for date from the user (day, month and year) and check whether the date is valid or invalid. Run your program for the following dates and fill the table. (Hint: For valid date  $1 \leq \text{month} \leq 12, 1 \leq \text{day} \leq \text{no-of-days}$  where no-of-days is 30 in case of months 4, 6, 9 and 11. 31 in case of months 1, 3, 5, 7, 8, 10 and 12. In case of month 2 no-of-days is 28 or 29 depending on year is leap or not)

Date	Output
12-10-1984	
32-10-1920	
10-13-1984	
29-2-1984	
29-2-2003	
29-2-1900	

2. Write a program having menu that has three options - add, subtract or multiply two fractions. The two fractions and the options are taken as input and the result is displayed as output. Each fraction is read as two integers, numerator and denominator.

Instructor should fill in the blanks with appropriate values.

Signature of the instructor

Date

**Assignment Evaluation**

**Signature**

0: Not done

2: Late Complete

4: Complete

1: Incomplete

3: Needs improvement

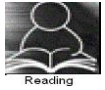
5: Well Done

## Exercise 5

Start Date / /



**To demonstrate use of simple loops.**



You should read following topics before starting this exercise

1. Different types of loop structures in C.
2. Syntax and usage of these statements.



We need to perform certain actions repeatedly for a fixed number of times or till some condition holds true. These repetitive operations are done using loop control statements. The types of loop structures supported in C are

1. while statement
2. do-while statement
3. for statement

Sr. No	Statement Syntax	Flowchart	Example
1.	<p><b>while statement</b></p> <pre>while (condition) {     statement 1;     statement 2;     .     . }</pre>		<pre>/* accept a number*/ scanf("%d", &amp;n); /* if not a single digit */ while ( n &gt; 9) {     /* remove last digit     n = n /10; }</pre>
2.	<p><b>do-while statement</b></p> <pre>do {     statement 1;     statement 2;     .     . } while (condition);</pre>		<pre>/*initialize sum*/ sum =0; do { /* Get a number */ printf( " give number"); scanf("%d",&amp;n); /* add number to sum*/ sum=sum+n; } while ( n&gt;0); printf ( "sum is %d", sum);</pre>



3.	<p><b>for statement</b></p> <pre>for(expr1; expr2; expr3) {     statement 1     .     . } expr1 = initialization expression expr2 = loop condition expr3 = alteration expression which alters the loop variable</pre>	<pre> graph TD     Start(( )) --&gt; Expr1[expr1]     Expr1 --&gt; Test{Test expr2}     Test -- True --&gt; LoopBody[Loop Body]     LoopBody --&gt; Expr3[Expr3]     Test -- False --&gt; Exit(( ))   </pre>	<pre>/* display first 10 multiples of 2 */ for( i=1; i &lt;= 10; i++) {     printf ("2 X %d = %d\n", i, 2*i); }</pre>
----	---	--	---

Note: Usually the for loop is used when the statements have to be executed for a fixed number of times. The while loop is used when the statements have to be executed as long as some condition is true and the do-while loop is used when we want to execute statements at least once (example: menu driven programs)

3. Sample program- to print sum of 1+2+3+.....n.

Step 1: Writing the Algorithm	Step 2: Draw the flowchart	Step 3: Writing Program
<ol style="list-style-type: none"> <li>1. Start</li> <li>2. Initialize sum to 0.</li> <li>3. Accept n.</li> <li>4. Compute sum=sum+n</li> <li>5. Decrement n by 1</li> <li>6. if n &gt; 0 go to step 4</li> <li>7. Display value of sum.</li> <li>8. Stop</li> </ol>	<pre> graph TD     Start([start]) --&gt; Sum0[Sum = 0]     Sum0 --&gt; ReadN[/Read n/]     ReadN --&gt; Compute[Compute Sum=sum+n]     Compute --&gt; Test{n &gt; 0}     Test -- True --&gt; Compute     Test -- False --&gt; Print[/Print value of sum/]     Print --&gt; Stop([stop])   </pre>	<pre>/* Program to calculate sum of numbers */  #include &lt;stdio.h&gt; main( ) { /* variable declarations */     int sum = 0, n;     printf("enter the value of n : ");     scanf("%d",&amp;n);     while (n&gt;0)     {         sum = sum + n;         n--;     }     printf("\n The sum of numbers is %d", sum); }</pre>

4. Sample program- To read characters till EOF (Ctrl+Z) and count the total number of characters entered.

Step 1 : Writing the Algorithm	Step 2 : Draw the flowchart	Step 3 : Writing Program
<ol style="list-style-type: none"> <li>1. Start</li> <li>2. Initialize count to 0.</li> <li>3. Accept ch.</li> <li>4. If ch !=EOF     Count = count +1</li> <li>    Else     Go to step 6</li> <li>5. Go to step 3</li> <li>7. Display value of sum.</li> <li>8. Stop</li> </ol>	<pre> graph TD     Start([start]) --&gt; Init[count = 0]     Init --&gt; Read[Read ch]     Read --&gt; Dec{Ch=EOF}     Dec -- True --&gt; Inc[Count = count+1]     Inc --&gt; Read     Dec -- False --&gt; Print[Print count]     Print --&gt; Stop([stop])     </pre>	<pre> /* Program to count number of characters */  #include &lt;stdio.h&gt; main( ) {     char ch;     int count=0;     while((ch=getchar())!=EOF)         count++;      printf("Total characters = %d", count); } </pre>



Self-Activity

1. Write a program that accepts a number and prints its first digit. Refer sample code 1 given above. Execute the program for different values.
2. Write a program that accepts numbers continuously as long as the number is positive and prints the sum of the numbers read. Refer sample code 2 given above. Execute the program for different values.
3. Write a program to accept n and display its multiplication table. Refer to sample code 3 given above.
4. Type the sample program to print sum of first n numbers and execute the program for different values of n.
5. Write a program to accept characters till the user enters EOF and count number of times 'a' is entered. Refer to sample program 5 given above.

Signature of the instructor

Date



**Set A . Apply all the three program development steps for the following examples.**

1. Write a program to accept an integer n and display all even numbers upto n.
2. Accept two integers x and y and calculate the sum of all integers between x and y (both inclusive)
3. Write a program to accept two integers x and n and compute  $x^n$
4. Write a program to accept an integer and check if it is prime or not.
5. Write a program to accept an integer and count the number of digits in the number.
6. Write a program to accept an integer and reverse the number. Example: Input: 546, Output 645.
7. Write a program to accept a character, an integer n and display the next n characters.

Signature of the instructor

Date  /  /

**Set B. Apply all the three program development steps for the following examples.**

1. Write a program to display the first n Fibonacci numbers. (1 1 2 3 5 .....)
2. Write a program to accept real number x and integer n and calculate the sum of first n terms of the series  $x+ 3x+5x+7x+\dots$
3. Write a program to accept real number x and integer n and calculate the sum of first n terms of the series  $\frac{1}{x} + \frac{2}{x^2} + \frac{3}{x^3} + \dots$
4. Write a program to accept characters till the user enters EOF and count number of alphabets and digits entered. Refer to sample program 5 given above.
5. Write a program, which accepts a number n and displays each digit in words. Example: 6702 Output = Six-Seven-Zero-Two. (Hint: Reverse the number and use a switch statement)

Signature of the instructor

Date  /  /

**Set C. Write C programs to solve the following problems**

1. Write a program to accept characters from the user till the user enters \* and count the number of characters, words and lines entered by the user. (Hint: Use a flag to count words. Consider delimiters like  $\backslash n \backslash t , ; .$  and space for counting words)
2. Write a program which accepts a number and checks if the number is a palindrome (Hint number = reverse of number)  
Example: number = 3472 Output: It is not a palindrome number = 262, Output : It is a palindrome
3. A train leaves station A at 4.00 a.m and travels at 80kmph. After every 30 minutes, it reaches a station where it halts for 10 minutes. It reaches its final destination B at 1.00 p.m. Display a table showing its arrival and departure time at every intermediate station. Also calculate the total distance between A and B.

4. A task takes  $4\frac{1}{2}$  hours to complete. Two workers, A and B start working on it and take turns alternately. A works for 25 minutes at a time and is paid Rs 50, B works for 75 minutes at a time and is paid Rs. 150. Display the total number of turns taken by A and B, calculate their total amounts and also the total cost of the task.

Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

0: Not done

2: Late Complete

4: Complete

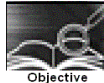
1: Incomplete

3: Needs improvement

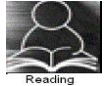
5: Well Done

**Exercise 6**

**Start Date** / /



**To demonstrate use of nested loops**



In the previous exercise, you used while, do-while and for loops. You should read following topics before starting this exercise

1. Different types of loop structures in C.
2. Syntax for these statements.
3. Usage of each loop structure



Nested loop means a loop that is contained within another loop. Nesting can be done upto any levels. However the inner loop has to be completely enclosed in the outer loop. No overlapping of loops is allowed.

Sr. No	Format	Sample Program
1.	<p><b>Nested for loop</b></p> <pre> for(exp1; exp2 ; exp3) { .....   for(exp11; exp12 ; exp13)   { .....   }   ..... }                     </pre>	<pre> /* Program to display triangle of numbers*/ #include &lt;stdio.h&gt; void main( ) {   int n , line_number , number;   printf("How many lines: ");   scanf("%d",&amp;n);   for(line_number =1 ;line_number &lt;=n; line_number++ )   {     for(number = 1; number &lt;= line_number; number++)       printf ("%dt", number);     printf ("\n");   } }                     </pre>
2.	<p><b>Nested while loop / do while loop</b></p> <pre> while(condition1) { ..... while(condition2)   { .....   }   ..... }  do { .....   while(condition1)   { .....   } }                     </pre>	<pre> /* Program to calculate sum of digits till sum is a single digit number */ #include &lt;stdio.h&gt; void main( ) {   int n , sum;   printf("Give any number ");   scanf("%d",&amp;n);   do   {     sum =0;     printf("%d ---&gt;",n);     while ( n&gt;0)     { sum +=n%10;                     </pre>

<pre>..... } while (condition2);</pre>	<pre>n= n/10; } n=sum; } while( n &gt;9); printf ( " %d" , n); }</pre>
--	--

Note: It is possible to nest any loop within another. For example, we can have a for loop inside a while or do while or a while loop inside a for.



Self-Activity

- The Sample program 1 displays n lines of the following triangle. Type the program and execute it for different values of n.

```

1
1 2
1 2 3
1 2 3 4
```

- Modify the sample program 1 to display n lines of the Floyd's triangle as follows (here n=4).

```

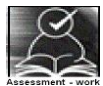
1
2 3
4 5 6
7 8 9 10
```

- The sample program 2 computes the sum of digits of a number and the process is repeated till the number reduces to a single digit number. Type the program and execute it for different values of n and give the output

Input number	Output
6534	
67	
8	
567	

Signature of the instructor

Date  /  /



Assessment - work

**Set A . Write C programs for the following problems.**

- Write a program to display all prime numbers between \_\_\_\_\_ and \_\_\_\_.
- Write a program to display multiplication tables from \_to\_ having n multiples each. The output should be displayed in a tabular format. For example, the multiplication tables of 2 to 9 having 10 multiples each is shown below.

```

2 × 1 = 2      3 × 1 = 3 .....9 × 1 = 9
2 × 2 = 4      3 × 2 = 6 .....9 × 2 = 18
.....
2 × 10 = 20   3 × 10 = 30 .....9 × 10 = 90
```

- Modify the sample program 1 to display n lines as follows (here n=4).

```

A      B      C      D
E      F      G
H      I
J
```

Signature of the instructor

Date  /  /

**Set B. Write C programs for the following problems.**

1. Write a program to display all Armstrong numbers between 1 and 500. (An Armstrong number is a number such that the sum of cube of digits = number itself Ex.  $153 = 1^3 + 5^3 + 3^3$ )
2. Accept characters till the user enters EOF and count the number of lines entered. Also display the length of the longest line. (Hint: A line ends when the character is `\n`)
3. Display all perfect numbers below 500. [A perfect number is a number, such that the sum of its factors is equal to the number itself]. Example: 6 (1 + 2 + 3), 28 (1+2+4+7+14)

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**Set C. Write C programs to solve the following problems**

1. A company has four branches, one in each zone: North, South, East and West. For each of these branches, it collects sales information once every quarter (four months) and calculates the average sales for each zone. Write a program that accepts sales details for each quarter in the four branches and calculate the average sales of each branch.
2. A polynomial in one variable is of the form  $a_0 + a_1x + a_2x^2 + \dots$ . For example,  $6 - 9x + 2x^5$ . Write a program to calculate the value of a polynomial. Accept the number of terms  $n$ , the value of  $x$ , and  $n+1$  coefficients.
3. The temperature of a city varies according to seasons. There are four seasons – spring, summer, Monsoon and winter. The temperature ranges are: Spring (15-25 degrees), Summer (25-40 degrees), Monsoon (20-35 degrees), Winter (5-20 degrees). Accept weekly temperatures (12 weeks per season) for each season, check if they are in the correct range and calculate the average temperature for each season.

Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

0: Not done <input type="text"/>	2: Late Complete <input type="text"/>	4: Complete <input type="text"/>
1: Incomplete <input type="text"/>	3: Needs improvement <input type="text"/>	5: Well Done <input type="text"/>

## Exercise 7

Start Date

/ /



**To demonstrate menu driven programs and use of standard library functions**



You should read following topics before starting this exercise

1. Use of switch statement to create menus as in exercise 3
2. Use of while and do while loops as in exercise 4



A function is a named sub-module of a program, which performs a specific, well-defined task. It can accept information from the calling function in the form of arguments and return only 1 value. C provides a rich library of standard functions. We will explore some such function libraries and use these functions in our programs.

**ctype.h** : contains function prototypes for performing various operations on characters. Some commonly used functions are listed below.

Function Name	Purpose	Example
isalpha	Check whether a character is a alphabet	if (isalpha(ch))
isalnum	Check whether a character is alphanumeric	if (isalnum(ch))
isdigit	Check whether a character is a digit	if (isdigit(ch))
isspace	Check whether a character is a space	if (isspace(ch))
ispunct	Check whether a character is a punctuation symbol	if (ispunct(ch))
isupper	Check whether a character is uppercase alphabet	if (isupper(ch))
islower	Check whether a character is lowercase alphabet	if (islower(ch))
toupper	Converts a character to uppercase	ch = toupper(ch)
tolower	Converts a character to lowercase	ch = tolower(ch)

**math.h** : This contains function prototypes for performing various mathematical operations on numeric data. Some commonly used functions are listed below.

Function Name	Purpose	Example
cos	cosine	$a^2 + b^2 - 2ab \cos(\text{abangle})$
exp(double x)	exponential function, computes $e^x$	exp( x )
log	natural logarithm	$c = \log(x)$
log10	base-10 logarithm	$y = \log_{10}(x)$
pow(x,y)	compute a value taken to an exponent, $x^y$	$y = 3^{\text{pow}(x, 10)}$
sin	sine	$z = \sin(x) / x$
sqrt	square root	$\text{delta} = \sqrt{b^2 - 4ac}$

Note: If you want to use any of the above functions you must include the library for example

```
#include <ctype.h>
```

```
#include <math.h>
```

In case of math library , it needs to be linked to your program. You have to compile the program as follows

```
$ cc filename -lm
```



A program that does multiple tasks, provides a menu from which user can choose the appropriate task to be performed. The menu should appear again when the task is completed so that the user can choose another task. This process continues till the user decides to quit. A menu driven program can be written using a combination of do-while loop containing a switch statement. One of the options provided in a menu driven program is to exit the program.

Statement Syntax	Flowchart	Example
<pre>do { display menu; accept choice; switch(choice) { case value1: block1;  break; case value2: block2;  break; . . . default : default block; } }while(choice != exit);</pre>	<pre> graph TD     start([start]) --&gt; Display[Display menu]     Display --&gt; Accept[/Accept choice/]     Accept --&gt; Case1{case 1}     Case1 -- True --&gt; Block1[block 1]     Case1 -- False --&gt; Case2{case 2}     Case2 -- True --&gt; Block2[block 2]     Case2 -- False --&gt; Default[default block]     Block1 --&gt; Exit{choice=exit}     Block2 --&gt; Exit     Default --&gt; Exit     Exit -- True --&gt; stop([stop])     Exit -- False --&gt; Display     </pre>	<pre>ch = getchar(); do { printf("\n 1: ISUPPER "); printf("\n 2: ISLOWER "); printf("\n 3: ISDIGIT "); printf("\n 4: EXIT ");  printf("Enter your choice :"); scanf("%d", &amp;choice);  switch(choice) { case 1: if(isupper(ch)) printf("Uppercase"); break; case 2: if(islower(ch)) printf("Lowercase"); break; case 3: if(isdigit(ch)) printf("Digit"); break; } }while(choice != 4);</pre>



Self-Activity

1. Write a menu driven program to perform the following operations on a character type variable.
  - i. Check if it is an alphabet
  - ii. Check if it is a digit.
  - iii. Check if it is lowercase.
  - iv. Check if it is uppercase.
  - v. Convert it to uppercase.
  - vi. Convert it to lowercase.

Refer to the sample code given above and use standard functions from ctype.h



Assessment - work

### Set A . Write C programs for the following problems

1. Write a program, which accepts a character from the user and checks if it is an alphabet, digit or punctuation symbol. If it is an alphabet, check if it is uppercase or lowercase and then change the case.

2. Write a menu driven program to perform the following operations till the user selects Exit. Accept appropriate data for each option. Use standard library functions from math.h

- i. Sine      ii. Cosine      iii. log      iv.  $e^x$       v. Square Root      vi. Exit

3. Accept two complex numbers from the user (real part, imaginary part). Write a menu driven program to perform the following operations till the user selects Exit.

- i. ADD      ii. SUBTRACT      iii. MULTIPLY      iv. EXIT

Signature of the instructor

Date  /  /

**Set B . Write C programs for the following problems**

1. Accept x and y coordinates of two points and write a menu driven program to perform the following operations till the user selects Exit.

- i. Distance between points.
- ii. Slope of line between the points.
- iii. Check whether they lie in the same quadrant.
- iv. EXIT

(Hint: Use formula  $m = (y_2 - y_1) / (x_2 - x_1)$  to calculate slope of line.)

2. Write a simple menu driven program for a shop, which sells the following items: The user selects items using a menu. For every item selected, ask the quantity. If the quantity of any item is more than 10, give a discount of \_\_\_%. When the user selects Exit, display the total amount.

Item	Price

Instructor should fill in the blanks with appropriate values.

Signature of the instructor

Date  /  /

**Set C . Write C programs for the following problems**

1. Write a program to calculate the total price for a picnic lunch that a user is purchasing for her group of friends. She is first asked to enter a budget for the lunch. She has the option of buying apples, cake, and bread. Set the price per kg of apples, price per cake, and price per loaf of bread in constant variables. Use a menu to ask the user what item and how much of each item she would like to purchase. Keep calculating the total of the items purchased. After purchase of an item, display the remaining amount. Exit the menu if the total has exceeded the budget. In addition, provide an option that allows the user to exit the purchasing loop at any time.

Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

- |                                    |   |                                   |
|------------------------------------|---|-----------------------------------|
| 0: Not done <input type="text"/>   | 2: Late Complete <input type="text"/>     | 4: Complete <input type="text"/>  |
| 1: Incomplete <input type="text"/> | 3: Needs improvement <input type="text"/> | 5: Well Done <input type="text"/> |

## Exercise 8

Start Date

/ /



**To demonstrate writing C programs in modular way (use of user defined functions)**



You should read following topics before starting this exercise

1. Declaring and Defining a function
2. Function call
3. Passing parameters to a function
4. Function returning a value



You have already used standard library functions. C allows to write and use user defined functions. Every program has a function named main. In main you can call some functions which in turn can call other functions.

The following table gives the syntax required to write and use functions

Sr. No	Actions involving functions	Syntax	Example
1.	Function declaration	returntype function(type arg1, type arg2 ... );	void display(); int sum(int x, int y);
2.	Function definition	returntype function(type arg1, type arg2 ... ) { /* statements*/ }	float calcaarea (float r) { float area = Pi *r*r ; return area; }
3.	Function call	function(arguments); variable = function(arguments);	display(); ans = calcaarea(radius);

### 1. Sample code

The program given below calculates the area of a circle using a function and uses this function to calculate the area of a cylinder using another function.

```
/* Program to calculate area of circle and cylinder using function */
```

```
#include <stdio.h>
void main()
{
    float areacircle (float r);
    float areacylinder(float r, int h);
    float area, r;
    printf("\n Enter Radius: ");
    scanf("%f",&r);

    area=areacircle(r);
    printf("\n Area of circle =%6.2f", area);

    printf("\n Enter Height: ");
```

```

scanf("%d",&h);
area=areacylinder(r,h);
printf("\n Area of cylinder =%6.2f", area);
}

float areacircle (float r)
{
    const float pi=3.142;
    return(pi * r*r );
}
float areacylinder (float r, int h)
{
    return 2*areacircle(r)*h;
}

```

## 2. Sample code

The function `isspace` returns 1 if its character parameter is a space, tab or newline character. The program accepts characters till the user enters EOF and counts the number of white spaces.

```

/* Program to count whitespaces using function */

#include <stdio.h>
void main()
{
    int isspace (char ch);
    char ch;
    int count=0;

    printf("\n Enter the characters. Type CTRL +Z to terminate: ");
    while((ch=getchar())!=EOF)
        if(isspace(ch))
            count++;
    printf("\n The total number of white spaces =%d", count);
}
int isspace (char ch)
{
    switch(ch)
    {
        case ' ':
        case '\t':
        case '\n': return 1;
        default : return 0;
    }
}

```



Self-Activity

1. Type the program given in sample code 1 above and execute the program. Comment function declarations and note down the type of error and the error messages received. Add another function to calculate the volume of sphere and display it.
2. Type the program given in sample code 2 above and execute the program. Comment function declaration and note down the type of error and the error messages received. Modify the function such that it returns 1 if the character is a vowel. Also count the total number of vowels entered.



**Set A . Write C programs for the following problems**

1. Write a function isEven, which accepts an integer as parameter and returns 1 if the number is even, and 0 otherwise. Use this function in main to accept n numbers and ckeck if they are even or odd.
2. Write a function, which accepts a character and integer n as parameter and displays the next n characters.
3. Write a function, which accepts a character and integer n as parameter and displays the next n characters.

Signature of the instructor

Date  /  /

**Set B . Write C programs for the following problems**

1. Write a function isPrime, which accepts an integer as parameter and returns 1 if the number is prime and 0 otherwise. Use this function in main to display the first 10 prime numbers.
2. Write a function that accepts a character as parameter and returns 1 if it is an alphabet, 2 if it is a digit and 3 if it is a special symbol. In main, accept characters till the user enters EOF and use the function to count the total number of alphabets, digits and special symbols entered.
3. Write a function power, which calculates  $x^y$ . Write another function, which calculates n! Using for loop. Use these functions to calculate the sum of first n terms of the Taylor series:

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} + \dots$$

Signature of the instructor

Date  /  /

**Set C . Write C programs for the following problems**

1. Write a menu driven program to perform the following operations using the Taylor series. Accept suitable data for each option. Write separate functions for each option.

a.  $e^x$  
$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \quad \text{for all } x$$

b.  $\sin(x)$  
$$\sin x = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1} = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots \quad \text{for all } x$$

c.  $\cos(x)$  
$$\cos x = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!} x^{2n} = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \dots \quad \text{for all } x$$

Define separate functions to calculate  $x^y$  and n! and use them in each function.

Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

0: Not done	<input type="text"/>	2: Late Complete	<input type="text"/>	4: Complete	<input type="text"/>
1: Incomplete	<input type="text"/>	3: Needs improvement	<input type="text"/>	5: Well Done	<input type="text"/>

## Exercise 9

Start Date

/ /
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### To demonstrate Recursion.



You should read the following topics before starting this exercise

1. Recursive definition
2. Declaring and defining a function
3. How to call a function
4. How to pass parameters to a function



Recursion is a process by which a function calls itself either directly or indirectly. The points to be remembered while writing recursive functions

- i. Each time the function is called recursively it must be closer to the solution.
- ii. There must be some terminating condition, which will stop recursion.
- iii. Usually the function contains an if –else branching statement where one branch makes recursive call while other branch has non-recursive terminating condition

Expressions having recursive definitions can be easily converted into recursive functions

Sr. No	Recursive definition	Recursive Function	Sample program
1.	<p>The recursive definition for factorial is given below:</p> $n! = 1 \quad \text{if } n = 0 \text{ or } 1$ $= n * (n-1)! \text{ if } n > 1$	<pre>long int factorial (int n) {   If (n==0)   (n==1)   /* terminating condition */     return(1);   else     return(n* factorial(n-1));   /* recursive call */ }</pre>	<pre>#include &lt;stdio.h&gt; main() {   int num;   /* function declaration */   long int factorial(int n);   printf("\n enter the number:");   scanf("%d",&amp;num);   printf("\n The factorial of %d is %ld",num,factorial(num)); } /* function code*/</pre>
2.	<p>The recursive definition for nCr ( no of combinations of r objects out of n objects) is as follows</p> $nCn = 1$ $nC0 = 1$ $nCr = n-1Cr + nCr-1$	<pre>long int nCr( int n, int r) { if(n==r    r==0)   /* terminating condition */     return(1);   else     return ( nCr(n-1,r) + nCr(n, r-1));   /* recursive call */ }</pre>	<pre>#include &lt;stdio.h&gt; /* function code*/ main() {   int n, r;   printf("\n enter the total number of objects:");   scanf("%d",&amp;n);   printf("\n enter the number of objects to be selected");   scanf("%d",&amp;r);   printf("\n The value %dC%d is %ld",n, r, nCr(n,r)); }</pre>



Self-Activity

1. Write the sample program 1 given above and execute the program. Modify the program to define a global integer variable count and increment it in factorial function. Add a printf statement in main function for variable count. Execute the program for different values and fill in the following table.

Sr. No.	num	factorial	Count
1.	0		
2	1		
3	5		
4			
5			

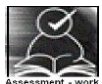
2. Write the sample program 2 given above and execute the program for different values of n and r. Modify the program to define a global integer variable count and increment it in nCr function. Add a print statement in main function for variable count. Execute the program for different values and fill in the following table

Sr. No.	n	r	nCr	Count
1.	5	0		
2	5	5		
3	5	2		
4	5			
5				

Instructor should fill in the blanks with appropriate values.

Signature of the instructor

Date  /  /



Assessment - work

### Set A . Write C programs for the following problems

1. Write a recursive C function to calculate the sum of digits of a number. Use this function in main to accept a number and print sum of its digits.
2. Write a recursive C function to calculate the GCD of two numbers. Use this function in main. The GCD is calculated as :  

$$\text{gcd}(a,b) = a \quad \text{if } b = 0$$

$$= \text{gcd}(b, a \text{ mod } b) \text{ otherwise}$$
3. Write a recursive function for the following recursive definition. Use this function in main to display the first 10 numbers of the following series  

$$a_n = 3 \quad \text{if } n = 1 \text{ or } 2$$

$$= 2 * a_{n-1} + 3 * a_{n-2} \text{ if } n > 2$$
4. Write a recursive C function to calculate  $x^y$ . (Do not use standard library function) Signature of the instructor  Date  /  /

/  /

**Set B . Write C programs for the following problems**

1. Write a recursive function to calculate the nth Fibonacci number. Use this function in main to display the first n Fibonacci numbers. The recursive definition of nth Fibonacci number is as follows:

$$\text{fib}(n) = \begin{cases} 1 & \text{if } n = 1 \text{ or } 2 \\ \text{fib}(n-2) + \text{fib}(n-1) & \text{if } n > 2 \end{cases}$$

2. Write a recursive function to calculate the sum of digits of a number till you get a single digit number. Example: 961 -> 16 -> 5. (Note: Do not use a loop)
3. Write a recursive C function to print the digits of a number in reverse order. Use this function in main to accept a number and print the digits in reverse order separated by tab.

Example 3456

6543

(Hint: Recursiveprint(n) = print n if n is single digit number  
 = print n % 10 + tab + Recursiveprint( n/10)

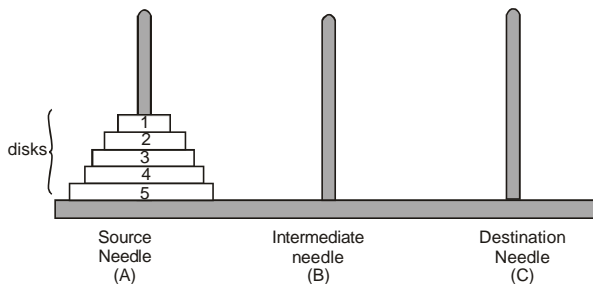
Signature of the instructor

Date  /  /

**Set C . Write C programs for the following problems**

1. The "Towers of Hanoi" problem: The objective is to move a set of disks arranged in increasing sizes from top to bottom from the source pole to a destination pole such that they are in the same order as before using only one intermediate pole subject to the condition that
  - i. Only one disk can be moved at a time
  - ii. A bigger disk cannot be placed on a smaller disk.

Write a recursive function which displays all the steps to move n disks from A to C.



Signature of the instructor

Date  /  /

**Assignment Evaluation**

**Signature**

0: Not done	<input type="text"/>	2: Late Complete	<input type="text"/>	4: Complete	<input type="text"/>
1: Incomplete	<input type="text"/>	3: Needs improvement	<input type="text"/>	5: Well Done	<input type="text"/>

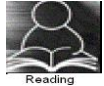


**Exercise 10**

**Start Date** / /



**To demonstrate use of 1-D arrays and functions.**



You should read the following topics before starting this exercise

1. What are arrays and how to declare an array?
2. How to enter data in to array and access the elements of an array.
3. How to initialize an array and how to check the bounds of an array?
4. How to pass an array to a function



An array is a collection of data items of the same data type referred to by a common name. Each element of the array is accessed by an index or subscript. Hence, it is also called a subscripted variable.

<b>Actions involving arrays</b>	<b>syntax</b>	<b>Example</b>
Declaration of array	<i>data-type array_name[size];</i>	int temperature[10]; float pressure[20];
Initialization of array	<i>data-type array_name[]={element1, element2, ....., element n};</i>  <i>data-type array_name[size]={element-1, element-2, ....., element-size};</i>  You cannot give more number of initial values than the array size. If you specify less values, the remaining will be initialized to 0.	int marks[]={45,57,87,20,90}; marks[3] refers to the fourth element which equals 20  int count[3]={4,2,9}; count[2] is the last element 9 while 4 is count[0]
Accessing elements of an array	The array index begins from <b>0 (zero)</b> To access an array element, we need to refer to it as array_name[index].	Value = marks[3]; This refers to the 4 <sup>th</sup> element in the array
Entering data into an array.		for (i=0; i<=9; i++) scanf("%d", &marks[i]);
Printing the data from an array		for(i=0; i<=9; i++) printf("%d", marks[i]);
Arrays and function	We can pass an array to a function using two methods. 1. Pass the array element by element 2. Pass the entire array to the function	<i>/* Passing the whole array*/</i> void modify(int a[5]) { int i; for(i=0; i<5 ; i++) a[i] = i; }

Sample program to find the largest element of an array

```
/* Program to find largest number from array */  
  
#include<stdio.h>  
int main()  
{  
    int arr[20]; int n;  
    void accept(int a[20], int n);  
    void display(int a[20], int n);  
    int maximum(int a[20], int n);  
  
    printf("How many numbers :");  
    scanf("%d", &n); accept(arr,n);  
    display(arr,n);  
    printf("The maximum is :%d" , maximum(arr,n));  
}  
  
void accept(int a[20], int n)  
{  
    int i;  
    for(i=0; i<n ; i++)  
        scanf("%d", &a[i]);  
}  
  
void display(int a[20], int n)  
{  
    int i;  
    for(i=0; i<n ; i++)  
        printf("%d\t", a[i]);  
}  
int maximum(int a[20], int n)  
{  
    int i, max = a[0];  
  
    for(i=1; i<n ; i++)  
        if(a[i] > max)  
            max = a[i];  
    return max;  
}
```



Self-Activity

1. Write a program to accept n numbers in an array and display the largest and smallest number. Using these values, calculate the range of elements in the array. Refer to the sample code given above and make appropriate modifications.
2. Write a program to accept n numbers in an array and calculate the average. Refer to the sample code given above and make appropriate modifications.

Signature of the instructor

Date



**Set A. Write programs to solve the following problems**

1. Write a program to accept n numbers in the range of 1 to 25 and count the frequency of occurrence of each number.
2. Write a function for Linear Search, which accepts an array of n elements and a key as parameters and returns the position of key in the array and -1 if the key is not found. Accept n numbers from the user, store them in an array. Accept the key to be searched and search it using this function. Display appropriate messages.
3. Write a function, which accepts an integer array and an integer as parameters and counts the occurrences of the number in the array.
4. Write a program to accept n numbers and store all prime numbers in an array called prime. Display this array.

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**Set B. Write programs to solve the following problems**

1. Write a program to accept n numbers from the user and store them in an array such that the elements are in the sorted order. Display the array. Write separate functions to accept and display the array. (Hint: Insert every number in its correct position in the array)
2. Write a function to sort an array of n integers using Bubble sort method. Accept n numbers from the user, store them in an array and sort them using this function. Display the sorted array.
3. Write a program to accept a decimal number and convert it to binary, octal and hexadecimal. Write separate functions.
4. Write a program to find the union and intersection of the two sets of integers (store it in two arrays).
5. Write a program to remove all duplicate elements from an array.

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**Set C. Write programs to solve the following problems**

1. Write a program to merge two sorted arrays into a third array such that the third array is also in the sorted order.

a 1	10	25	90						
a 2	9	16	22	26	10				
				0					
a 3	9	10	16	22	25	26	90	100	

2. Write a program to accept characters from the user till the user enters EOF and calculate the frequency count of every alphabet. Display the alphabets and their count.

Input: THIS IS A SAMPLE INPUT

Output:

Character	Count
T	2
H	1
I	3
.....	

3. Write a recursive function for Binary Search, which accepts an array of n elements and a key as parameters and returns the position of key in the array and -1 if the key is not found. Accept n numbers from the user, store them in an array and sort the array. Accept the key to be searched and search it using this function. Display appropriate messages

Signature of the instructor

Date

**Assignment Evaluation**

**Signature**

0: Not done <input style="width: 30px; height: 20px;" type="text"/>	2: Late Complete <input style="width: 30px; height: 20px;" type="text"/>	4: Complete <input style="width: 30px; height: 20px;" type="text"/>
1: Incomplete <input style="width: 30px; height: 20px;" type="text"/>	3: Needs improvement <input style="width: 30px; height: 20px;" type="text"/>	5: Well Done <input style="width: 30px; height: 20px;" type="text"/>

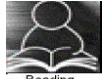
## Exercise 11

Start Date

/ /



To demonstrate use of 2-D arrays and functions.



You should read the following topics before starting this exercise

1. How to declare and initialize two-dimensional array
2. Accessing elements
3. Usage of two dimensional arrays



Actions involving 2-D arrays	syntax	Example
Declaration of 2-D array	<code>data-type array_name[size][size];</code>	<code>int mat[10][10]; float sales[4][10];</code>
Initialization of 2-D array	<code>data-type array_name[rows][cols]={ {elements of row 0},{ elements of row 1},.....}; data-type array_name[][cols]={element1, element2, ....., element size};</code>	<code>int num[][2] = {12, 34, 23, 45, 56, 45}; int num[3][2] = { {1,2}, {3,4}, {5,6}}; int num[3][2] = { 1,2,3,4, 5,6};</code>
Accessing elements of 2-D array	Accessing elements of an two-dimensional array - in general, the array element is referred as <code>array_name[index1][index2]</code> where <i>index1</i> is the row location of and <i>index2</i> is the column location of an element in the array.	<code>int m[3][2];</code> m is declared as a two dimensional array (matrix) having 3 rows (numbered 0 to 2) and 2 columns (numbered 0 to 1). The first element is <code>m[0][0]</code> and the last is <code>m[2][1]</code> . <code>value = m[1][1];</code>
Entering data into a 2-D array.		<code>int mat[4][3]; for (i=0; i&lt;4; i++) /* outer loop for rows */ for (j=0;j&lt;3; j++) /* inner loop for columns */ scanf("%d", &amp;mat[i][j]);</code>
Printing the data from a 2-D array		<code>for (i=0; i&lt;4; i++) /* outer loop for rows */ { for (j=0;j&lt;3; j++) /* inner loop for columns */ printf("%d\t", mat[i][j]); printf("\n"); }</code>

Sample program to accept, display and print the sum of elements of each row of a matrix.

```
/* Program to calculate sum of rows of a matrix*/

#include<stdio.h>
int main()
{
    int mat[10][10], m, n;
    void display(int a[10][10], int m, int n);
    void accept(int a[10][10], int m, int n);
    void sumofrows(int a[10][10], int m, int n);

    printf("How many rows and columns? ");
    scanf("%d%d",&m, &n);

    printf("Enter the matrix elements .");
    accept(mat, m, n);
    printf("\n The matrix is :\n");
    display(mat, m, n);
    sumofrows(mat,m,n);
}

void accept(int a[10][10], int m, int n)
{
    int i,j;
    for (i=0; i<m; i++) /* outer loop for rows */ for
        (j=0;j<n; j++) /* inner loop for columns */
            scanf("%d", &a[i][j]);
}

void display(int a[10][10], int m, int n)
{
    int i,j;
    printf("\nThe elements of %d by %d matrix are\n", m, n);
    for (i=0; i<m; i++) /* outer loop for rows */
    {
        for (j=0;j<n; j++) /* inner loop for columns */
            printf("%d\t", a[i][j]);
        printf("\n");
    }
}

void somofrows(int a[10][10], int m, int n)
{
    int i,j, sum;
    for (i=0; i<m; i++) /* outer loop for rows */
    { sum=0
        for (j=0;j<n; j++) /* inner loop for columns */
            sum= sum+a[i][j];
        printf("Sum of elements of row %d = %d", i, sum);
    }
}
```



1. Write a program to accept, display and print the sum of elements of each row and sum of elements of each column of a matrix. Refer to sample code given above.

Signature of the instructor

Date



**Set A . Write C programs for the following problems.**

1. Write a program to accept a matrix A of size mXn and store its transpose in matrix B. Display matrix B. Write separate functions.
2. Write a program to add and multiply two matrices. Write separate functions to accept, display, add and multiply the matrices. Perform necessary checks before adding and multiplying the matrices.

Signature of the instructor

Date

**Set B . Write C programs for the following problems.**

1. Write a menu driven program to perform the following operations on a square matrix. Write separate functions for each option.
  - a. Check if the matrix is symmetric.
  - b. Display the trace of the matrix (sum of diagonal elements).
  - c. Check if the matrix is an upper triangular matrix.
2. Write a menu driven program to perform the following operations on a square matrix. Write separate functions for each option.
  - i) Check if the matrix is a lower triangular matrix.
  - ii) Check if it is an identity matrix.
3. Write a program to accept an mXn matrix and display an m+1 X n+1 matrix such that the m+1<sup>th</sup> row contains the sum of all elements of corresponding row and the n+1<sup>th</sup> column contains the sum of elements of the corresponding column.

Example:

A				B			
1	2	3		1	2	3	6
4	5	6		4	5	6	15
7	8	9		7	8	9	24
				12	15	18	45

Signature of the instructor

Date

**Set C. Write programs to solve the following problems**

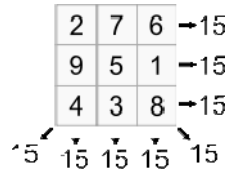
1. Pascal's triangle is a geometric arrangement of the binomial coefficients in a triangle. It is named after Blaise Pascal. Write a program to display n lines of the triangle.

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1

```

2. A magic square of order  $n$  is an arrangement of  $n^2$  numbers, in a square, such that the  $n$  numbers in all rows, all columns, and both diagonals sum to the same constant. A normal magic square contains the integers from 1 to  $n^2$ . The magic constant of a magic square depends on  $n$  and is  $M(n) = (n^3+n)/2$ . For  $n=3,4,5$ , the constants are 15, 34, 65 resp. Write a program to generate and display a magic square of order  $n$ .



Signature of the instructor

Date

**Assignment Evaluation**

0: Not done

1: Incomplete

2: Late Complete

3: Needs improvement

**Signature**

4: Complete

5: Well Done





Savitribai Phule Pune University

## Section-II

F. Y. B.Sc. (Computer Science)

SEMESTER I

Lab Course – II

Relational Database Management  
System Assignments



### Assignment Completion Sheet

Lab Course II			
Advanced Relational Database Management System Assignments			
Sr. No.	Assignment Name	Marks (out of 5)	Instructor Sign
1	Case study – ER diagram		
2	Case study – ER diagram (with generalization)		
3	Case study – ER diagram (with aggregation)		
4	Using PostgreSQL (demo of PostgrSQL)		
5	Data Definition queries (Create)		
6	Data Definition queries (Alter)		
7	Data Definition queries (Drop)		
8	Simple queries (Select)		
9	Queries with join		
10	Aggregate queries (Group by and Having)		
11	Nested Queries		
12	Data Manipulation queries (Insert)		
13	Data Manipulation queries (Delete)		
14	Data Manipulation queries (Update)		
Total (Out of 70)			
Total (Out of 07)			

This is to certify that Mr./Ms. \_\_\_\_\_  
Has successfully completed the RDBMS course work for Lab Course II and has scored  
\_\_\_\_\_ Marks out of 07.

**Instructor**

**H.O. D / Coordinator**

**Internal Examiner**

**External Examiner**

## Assignment No. 1

### What is Entity RelationshipDiagram (ER-Diagram)?

ER-Diagram is a pictorial representation of data that describes how data is communicated and related to each other. Any object, such as entities, attributes of an entity, sets of relationship and other attributes of relationship can be characterized with the help of the ER diagram.

#### Entities:

They are represented using the rectangle shape box. These rectangles are named with the entity set they represent.



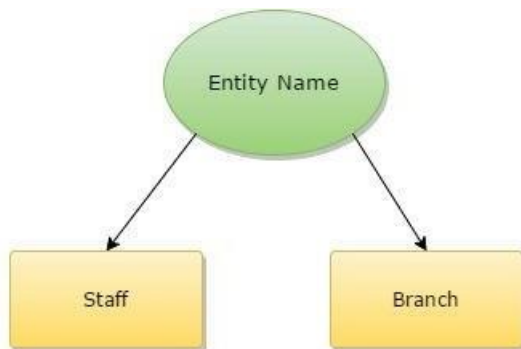
Entities

ER modeling is a top-down structure to database design that begins with identifying the important data called entities and relationships in combination between the data that must be characterized in the model. Then database model designers can add more details such as the information they want to hold about the entities and relationships which are the attributes and any constraints on the entities, relationships, and attributes. ER modeling is an important technique for any database designer to master and forms the basis of the methodology.

- **Entity type:** It is a group of objects with the same properties that are identified by the enterprise as having an independent existence. The basic concept of the ER model is the entity type that is used to represent a group of 'objects' in the 'real world' with the same properties. An entity type has an independent existence within a database.
- **Entity occurrence:** A uniquely identifiable object of an entity type.

#### Diagrammatic Representation of Entity Types

Each entity type is shown as a rectangle labeled with the name of the entity, which is normally a singular noun.

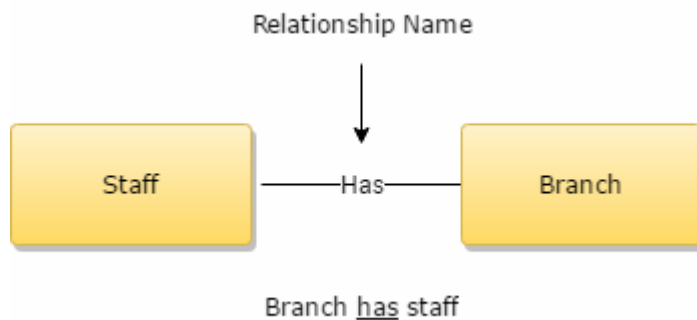


Diagrammatic representation of the Staff and Branch entity types.

### What is Relationship Type?

A relationship type is a set of associations between one or more participating entity types. Each relationship type is given a name that describes its function.

Here is a diagram showing how relationships are formed in a database.



### What is degree of Relationship?

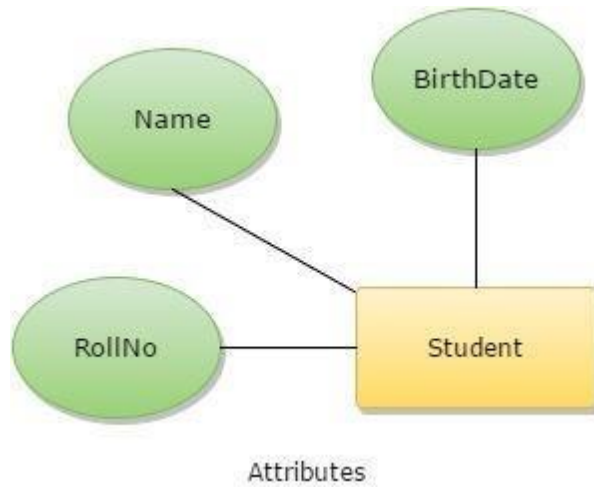
The entities occupied in a particular relationship type are referred to as participants in that relationship. The number of participants involved in a relationship type is termed as the degree of that relationship.

In the above figured example “Branch has staff”, there is a relationship between two participating entities. A relationship of degree two is called binary degree (relationship).

### What are Attributes?

Attributes are the properties of entities that are represented by means of ellipse shaped figures. Every elliptical figure represents one attribute and is directly connected to its

entity (which is represented as rectangle).

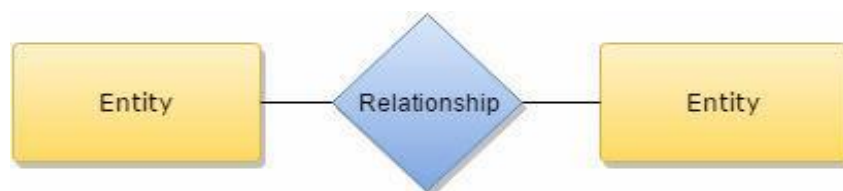


It is to be noted that multi-valued attributes are represented using double ellipse like this:



### Relationships

Relationships are represented by diamond-shaped box. All the entities (rectangle shaped) participating in a relationship gets connected using a line.



There are four types of relationships. These are:

- **One-to-one:** When only a single instance of an entity is associated with the relationship, it is termed as '1:1'.
- **One-to-many:** When more than one instance of an entity is related and linked with a relationship, it is termed as '1:N'.
- **Many-to-one:** When more than one instance of entity is linked with the relationship, it is termed as 'N:1'.
- **Many-to-many:** When more than one instance of an entity on the left and more than one instance of an entity on the right can be linked with the relationship, then it is termed as N:N relationship.

### **Set A**

Suppose you are given the following requirements for a simple database for the National Hockey League (NHL):

- the NHL has many teams,
- each team has a name, a city, a coach, a captain, and a set of players,
- each player belongs to only one team,
- each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,
- a team captain is also a player,
- a game is played between two teams (referred to as host\_team and guest\_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).

Consider the case study given above and find out entities and their attributes.

### **Set B**

Find different set of entities and their attributes for online bookstore

#### **Assignment Evaluation**

0: Not Done [ ]

1: Incomplete [ ] 4:

2: Late Complete [ ]

3: Needs Improvement [ ]

Complete [ ]

5: WellDone [ ]

**Signature of Teacher**

## Assignment no 2

The ER model supported with additional semantic concepts is called the Enhanced Entity-Relationship (EER) model. There are three of the most important and useful added concepts of the EER model, namely specialization/generalization, aggregation, and composition. In this chapter you will learn about the main two important concepts. These are:

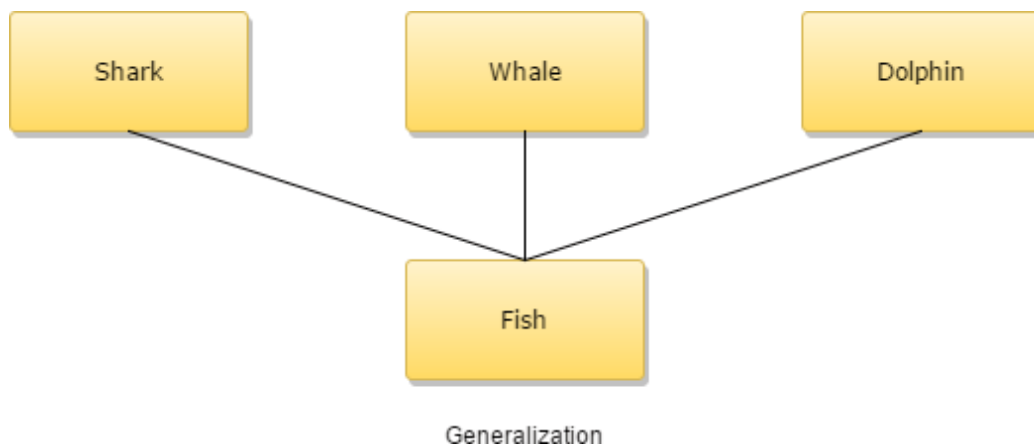
- Generalization                      Aggregation

### What are Generalization / Specialization?

The concept of generalization (specialization) is associated with special types of entities known as super classes and subclasses, and the process of attribute inheritance. Database managers begin this section by defining what super classes and subclasses are and by examining super class/subclass relationships. The ER Model has the capability of articulating database entities in a conceptual hierarchical manner. As the hierarchy goes up, it generalizes the view of entities and as you go deep in the hierarchy, it will provide with the detail of every entity included. Going up in this structure is called generalization, where entities are associated together to represent a more generalized view. Generalization is a bottom-up approach.

In generalization, a number of entities are accommodated together into one generalized entity or category based on their similar characteristics. In the below mentioned figure, whale, shark and dolphin are generalized as fish, i.e. they have been categorized as the fish.

- **Super-class:** An entity type that includes one or more dissimilar sub-groupings of its occurrences that is required to be represented in a data model.
- **Sub-class:** A distinct sub-grouping of occurrences of an entity type that require to be represented in a data model.





### **Super-class/Subclass Relationships**

Each member of a sub class is also a member of the super class i.e. the entity in the sub class is the same entity in the super class, but has a different role. The relationship between a super class and a sub class is one-to-one (1:1) and is termed as a super-class/sub-class relationship.

Set A

Refer to the case studies given in assignment no 1

1. Find the relationships among all entities from setA
2. Find the relationships among all entities from setB

### **Assignment Evaluation**

0: Not Done [ ]

1: Incomplete [ ]

2: Late Complete [ ]

3: Needs Improvement [ ]

4: Complete [ ]

5: WellDone [ ]

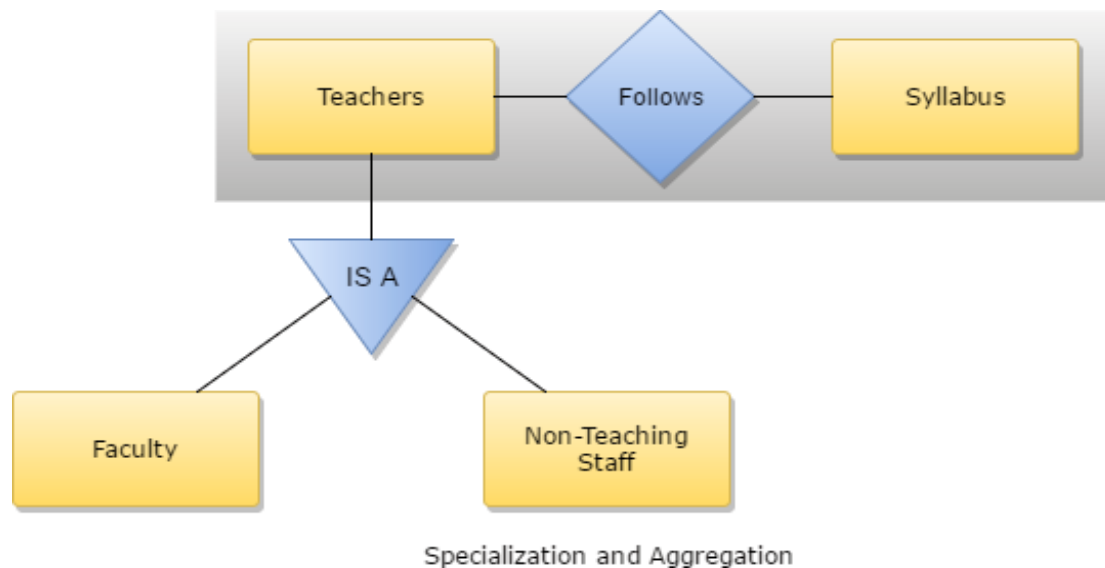
**Signature of Teacher**

### Assignment no.3

What is Aggregation?

A relationship represents a connection between two entity types that are conceptually at the same level. Sometimes you may want to model a 'has-a', 'is-a' or 'is-part-of' relationship, in which one entity represents a larger entity (the 'whole') that will consist of smaller entities (the 'parts'). This special kind of relationship is termed as an aggregation. Aggregation does not change the meaning of navigation and routing across the relationship between the whole and its parts.

An example of an aggregation is the 'Teacher' entity following the 'syllabus' entity act as a single entity in the relationship. In simple words, aggregation is a process where the relation between two entities is treated as a single entity.



Set A

Draw an Entity-Relationship diagram for the National Hockey League (NHL):

- the NHL has many teams,
- each team has a name, a city, a coach, a captain, and a set of players,
- each player belongs to only one team,
- each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,
- a team captain is also a player,
- a game is played between two teams (referred to as host\_team and guest\_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).

## Set B

Consider a database used to record the marks that students get in different exams of different course offerings.

a) Construct an E-R diagram that models exams as entities, and uses a ternary relationship, for the above database.

b) Construct an alternative E-R diagram that uses only a binary relationship between students and course-offerings. Make sure that only one relationship exists between a particular student and course-offering pair, yet you can represent the marks that a student gets in different exams of a course offering.

## Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ] 4:

2: Late Complete [ ]

3: Needs Improvement [ ]

Complete [ ]

5: WellDone [ ]

**Signature of Teacher**

## Assignment no.4 Using

### Postgresql (Demo of Postgresql)

#### Installation of PostgreSQL on Windows

##### Download PostgreSQL

To download PostgreSQL to install it on Windows 7, please visit the following web page : <http://www.postgresql.org/download/windows> and click on the "Download" link under "One click installer". The downloaded package will install PostgreSQL Server and pgadmin III GUI to manage PostgreSQL Server and StackBuilder which can be used to download drivers and tools for PostgreSQL Server.

Once you click on the said "Download" link, it will take you to another page from where you need to select the package depending upon your OS platform. So, for installing PostgreSQL on 32 bit Windows 7, select "Win x86-32". If you are using a 64 bit OS, select "Win x86-64". That will start the download process and depending up on your connection speed, take a while to get downloaded.

Make sure you have turned Third Party AntiVirus off while installing.

Once the download is finished, run the postgresql-9.1.1-1-windows.exe file and select the location where you want to install it. By default, it is installed within Program Files folder. Then it asks you to enter a password. Keep the port as default. When asked for "Locale", we have selected "English, United States". It will take a while to install PostgreSQL on your system.



On completion of the installation process, you will get the following screen.



After the installation process is completed, you can access pgAdmin III, psql, StackBuilder and PostgreSQL shell from your Program Menu under PostgreSQL 9.1.

### Connect to PostgreSQL from the command line

Running the PostgreSQL interactive terminal program, called psql, which allows you to interactively enter, edit, and execute SQL commands. At the time of installing postgres to your operating system, it creates an "initial DB" and starts the postgres server domain running.

Typically initdb creates a table named "postgres" owned by user "current logged in user name" At the

command line in your operating system, type the following command.

#### Debian based systems like Ubuntu :

Connect/login as root -

```
user@user-pc:~$ sudo -i -u postgres
postgres@user-pc:~$ psql
psql (9.3.5, server 9.3.6)
Type "help" for help.
```

#### Redhat based systems like Centos / Fedora :

Connect/login as root -

```
user@user-pc:~$ su - postgres
user@user-pc:~$ psql
psql (9.3.6)
Type "help" for help.
```

#### Windows :

In windows, current user doesn't matter

```
C:\Program Files\PostgreSQL\9.4\bin>psql -U postgres
Password for user postgres:
psql (9.4.1)
Type "help" for help.
```

```
postgres=#
```

After accessing a PostgreSQL database, you can run SQL queries and more. Here are some common *psql* commands

- To view help for *psql* commands, type \?
- To view help for SQL commands, type \h.
- To view information about the current database connection, type \conninfo.
- To list the database's tables and their respective owners, type \dt.
- To list all of the tables, views, and sequences in the database, type \z.
- To exit the *psql* program, type \q.

### PostgreSQL-Data Types

A datatype specifies, what kind of data you want to store in the table field. While creating table, for each column, you have to use a datatype. There are different categories of data types in PostgreSQL discussed below for your ready reference:

Type	Data Type	Description
<b>Numeric Types</b>	smallint	2-byte small-range integer
	integer, int	A signed, fixed precision 4-byte
	bigint	stores whole numbers, large range 8 byte
	real	4-byte, single precision, floating-point number
	serial	4-byte auto incrementing integer
	double precision	8-byte, double precision, floating-point number
	numeric(m,d)	Where m is the total digits and d is the number of digits after the decimal.
<b>Character Types</b>	character(n), char(n)	Fixed n-length character strings.
	character varying(n), varchar(n)	A variable length character string with limit.
	text	A variable length character string of unlimited length.
<b>Monetary Types</b>	money	currency amount,8 bytes
<b>Boolean type</b>	boolean	It specifies the state of true or false,1 byte.
<b>Date/Time Type</b>	date	date (no time of day),4 byte.
	time	time of day (no date),8 byte
	time with time zone	times of day only, with time zone,12 bytes
	bit(n)	Fixed-length bit string Where n is the length of the bit string.
	varbit(n) bit varying(n)	Variable-length bit string, where n is the length of the bit string.

## Assignment no.5

### Data Definition Query (Create)

**Objective:** To create simple tables, with only the primary key constraint ( as a table level constraint & as a field level constraint) (include all data types)

A table is a database object that holds data. A table must have unique name, via which it can be referred. A table is made up of columns. Each column in the table must be given a unique name within that table. Each column will also have size a data-type and an optional constraint.

Syntax for **table creation** :

Create tablename( attribute list);  
Attribute list : ( [ attribute name data type optional constraint] , .....)

Create the following tables with primary key constraint

1. Create table emp (eno integer primary key, enamevarchar[50] , salaryfloat);
2. Create table books( id integer UNIQUE, title text NOT NULL, author\_idinteger,sub\_idinteger,CONSTRAINTbooks\_id\_pkey PRIMARY KEY(id));
3. Create table sales\_order(order\_no char[10] PRIMARY KEY, order\_date date, salesman\_no integer);
4. Create table client\_master (client\_no integer CONSTRAINT p\_client PRIMARY KEY, name varchar[50], addr text, bal\_due integer);
5. Create table inventory(inv\_no integer PRIMARY KEY, in\_stock Boolean);
6. create table sales\_order1(order\_no char[10], product\_no char[10],qty\_orderedinteger,product\_rate numeric(8,2),PRIMARY KEY(order\_no,product\_no));

### SET A

1. Create a table with following details

Table Name		PLAYER	
Columns	Column Name	Column Data Type	Constraints
1	player_id	Integer	Primary key
2	Name	varchar (50)	
3	Birth_date	date	
4	Birth_place	varchar(100)	
Table level constraint			

2. Create a table with following details

Table Name		Student	
Columns	Column Name	Column Data Type	Constraints
1	Roll_no	integer	
2	Class	varchar (20)	
3	Weight	numeric (6,2)	
4	Height	numeric (6,2)	
Table level constraint		Roll_no and class as primary key	

3. Create a table with details as given below

Table Name		Project		
Columns	Column Name	Column Data Type	Constraints	
1	project_id	integer	Primary key	
2	Project_name	varchar (20)		
3	Project_description	text		
4	Status	boolean		
Table level constraint				

4. Create a table with details as given below

Table Name		Donor		
Columns	Column Name	Column Data Type	Constraints	
1	Donor_no	integer	Primary key	
2	Donor_name	varchar (50)		
3	Blood_group	Char(6)		
4	Last_date	date		
Table level constraint				

### Set B

Create table for the information given below by choosing appropriate data types and also specifying proper primary key constraint on fields which are underlined

1. Property ( property\_id, property\_desc , area, rate, agri\_status )
2. Actor ( actor\_id, Actor\_name, birth\_date )
3. Movie ( movie-no, name, release-year )
4. Hospital ( hno,hname,hcity)

### Set C

Create table for the information given below by choosing appropriate data types and also specifying proper primary key constraint on fields which are underlined

1. Table \_\_\_\_\_( \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, Primary key : \_\_\_\_\_ )

Instructor should fill in the blanks with appropriate values

### Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ] 4:

2: Late Complete [ ]

3: Needs Improvement [ ]

Complete [ ]

5: WellDone [ ]

**Signature of Teacher**



## Assignment No.6

**Objective:** To create one or more tables with Check constraint , Unique constraint, Not null constraint , in addition to the first two constraints (PK & FK)

Constraints can be defined as either of the following:

```
CREATE TABLE table_name (  
column_name1 TYPE column_constraint,  
column_name2 type column constraint,  
table_constraint table_constraint  
);
```

The following are the commonly used column constraints in PostgreSQL:

- NOT NULL – the value of the column cannot be NULL.
- UNIQUE – the value of the column must be unique across the whole table. However, the column can have many NULL values because PostgreSQL treats each NULL value to be unique. Notice that SQL standard only allows one NULL value in the column that has the UNIQUE constraint.
- PRIMARY KEY – this constraint is the combination of NOT NULL and UNIQUE constraints. You can define one column as PRIMARY KEY by using column-level constraint. In case the primary key contains multiple columns, you must use the table- level constraint.
- CHECK – enables to check a condition when you insert or update data. For example, the values in the price column of the product table must be positive values.
- REFERENCES – constrains the value of the column that exists in a column in another table. You use REFERENCES to define the foreign key constraint.

The following are the commonly used table constraints in PostgreSQL:

The table constraints are similar to column constraints except that they are applied to the entire table rather than to an individual column.

The following are the table constraints:

- UNIQUE (column\_list)– to force the value stored in the columns listed inside the parentheses to be unique.
- PRIMARY KEY(column\_list) – to define the primary key that consists of multiple columns.
- CHECK (condition) – to check a condition when inserting or updating data.
- REFERENCES– to constrain the value stored in the column that must exist in a column in another table.

### Syntax for constraints

#### 1. Null constraint

**Use of null constraint:** Specifies that the column can contain null values

**Use of not null constraint:** Specifies that the column can not contain null values

**Ex.:** Create table client\_master (client\_no integer not null, name char(10) not null, addr varchar(30) null, bal\_due numeric);

## 2. Unique constraint

**Use:** forces the column to have unique value.

**Ex.:** Create table client\_master (client\_no integer not null, name char(10) not null, addr varchar(30) null, bal\_due numeric, ph\_no integer unique);

## 3. Check constraint

**Use :** Specifies a condition that each row in the table must satisfy. Condition is specified as a logical expression that evaluates either true or false.

**Ex.** Create table client\_master (client\_no varchar CHECK(client\_no like 'C%'), name char(10) check (name=upper(name)), addr varchar(30) null, bal\_due numeric, ph\_no integer unique);

### Set A

1. Create a table with details as given below

Table Name	Machine		
Columns	Column Name	Column Data Type	Constraints
1	Machine_id	integer	Primary key
2	Machine_name	varchar (50)	NOT NULL, uppercase
3	Machine_type	varchar(10)	Type in ( 'drilling', 'milling', 'lathe', 'turning', 'grinding')
4	Machine_price	float	Greater than zero
5	Machine_cost	float	
Table level constraint		Machine_cost less than Machine_price	

2. Create a table with details as given below

Table Name	Employee		
Columns	Column Name	Column Data Type	Constraints
1	Employee_id	integer	Primary key
2	Employee_name	varchar (50)	NOT NULL, uppercase
3	Employee_desg	varchar(10)	Designation in ( 'Manager', 'staff', 'worker')
4	Employee_salary	float	Greater than Zero
5	Employee_uid	text	Unique
Table level constraint		Employee_uid not equal to Employee_id	

### Set B

1. Create a table with details as given below

Table Name		Student		
Columns	Column Name	Column Data Type	Constraints	
1	Stud_id	integer	Primary key	
2	Stud_name	varchar (50)	NOT NULL, uppercase	
3	Stud_Class	varchar(10)	Class in ( 'FY', 'SY', 'TY')	
4	Stud_Marks	float	Greater than Zero	
5	Stud_uid	text	Unique	
Table level constraint		Stud_uid not equal to Stud_id		

### Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ]

2: Late Complete [ ]

3: Needs Improvement [ ]

4: Complete [ ]

5: WellDone [ ]

**Signature of Teacher**

## Assignment No.7

### 1. Data Definition Queries (Alter)

### 2. Data Definition Queries (Drop)

**Objective:** To drop a table from the database, to alter the schema of a table in the Database.

1. **Alter Statement:** Alter table command is use to modify the structure of the table.

**Syntax:**

```
ALTER TABLE table_name action;
```

PostgreSQL provides many actions that allow you to:

- Add a column, drop a column, rename a column, or change a column's data type.
- Set a default value for the column.
- Add a CHECK constraint to a column.
- Rename a table.

The following illustrates the ALTER TABLE statement variants.

1. To **add a new column to a table**, you use **ALTER TABLE ADD COLUMN** statement:

```
ALTER TABLE table_name ADD COLUMN new_column_name TYPE;
```

2. To **remove an existing column**, you use **ALTER TABLE DROP COLUMN** statement:

```
ALTER TABLE table_name DROP COLUMN column_name;
```

3. To **rename an existing column**, you use the ALTER TABLE RENAME COLUMN TO statement:

```
ALTER TABLE table_name RENAME COLUMN column_name TO  
new_column_name;
```

4. To **change a default value** of the column, you use ALTER TABLE ALTER COLUMN SET DEFAULT or DROP DEFAULT:

```
ALTER TABLE table_name ALTER COLUMN [SET DEFAULT value | DROP  
DEFAULT]
```

5. To **change the NOT NULL constraint**, you use ALTER TABLE ALTER COLUMN statement:

```
ALTER TABLE table_name ALTER COLUMN [SET NOT NULL| DROP NOT NULL]
```

6. To **add a CHECK constraint**, you use ALTER TABLE ADD CHECK statement:

```
ALTER TABLE table_name ADD CHECK expression;
```

7. To **add a constraint**, you use ALTER TABLE ADD CONSTRAINT statement:

```
ALTER TABLE table_name ADD CONSTRAINT constraint_name  
constraint_definition
```

8. To **rename a table** you use ALTER TABLE RENAME TO statement:

```
ALTER TABLE table_name RENAME TO new_table_name;
```

### 2. Drop Statement:

**Use :** Deletes an object (table/view/constraint) schema from the database.

**Syntax:** drop table table\_name;

**Example:** drop table employee;

### Set A

Create the table given below. Assume appropriate data types for attributes. Modify the table, as per the alter statements given below. Type \d <table name> and write the output.

Supplier\_master(supplier\_no, supplier\_name,city,phone-no,amount)

1. Alter table supplier\_master add primary key (supplier\_no);
2. Alter table supplier\_master add constraint city-check check city in('pune', 'mumbai', 'calcutta');
3. alter table supplier\_master drop phone-no;
4. alter table supplier\_master modify (supplier\_name varchar(50));
5. alter table supplier\_master drop constraint city-check;
6. drop table supplier\_master;

### Set B

1. Remove employee table from your database. Create table employee(eno, ename, sal). Add designation column in the employee table with values restricted to a set of values.

2. Remove student table from your database.

Create table student( student\_no, sname,date\_of\_birth).

Add new column into student relation named address as a text data type with NOT NULL integrity constraint and a column phone of data type integer.

3. Consider the project relation created in the assignment 12. Add a constraint that the project name should always start with the letter 'R'

4. Consider the relation hospital created in assignment 12. Add a column hbudget of type int , with the constraint that budget of any hospital should always > 50000.

### Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ]

2: Late Complete [ ]

3: Needs Improvement [ ]

4: Complete [ ]

5: Well Done [ ]

**Signature of Teacher**

## Assignment No.8

### Data Manipulation Queries (Insert, Delete, Update)

**Objective:** To insert / update / delete records using tables created in previous Assignments. (Use simple forms of insert / update / delete statements)

INSERT syntax

```
INSERT INTO table_name (column1, column2 ...) VALUES (value1, value2 ...);
```

First, you specify the name of the table that you want to insert a new row after the INSERT INTO clause, followed by a comma-separated column list.

Second, you list a comma-separated value list after the VALUES clause. The value list must be in the same order as the columns list specified after the table name.

**To add multiple rows into a table at a time**, use the following syntax:

```
INSERT INTO table (column1, column2, ...) VALUES (value1, value2, ...),(value1, value2, ...) ,...; You just need to add additional comma-separated value lists after the first list, each value in the list is separated by a comma (,).
```

**To insert data that comes from another table**, use the INSERT INTO SELECT statement as follows:

```
INSERT INTO table(value1,value2,...) SELECT column1,column2,... FROM another_table WHERE condition;
```

The WHERE clause is used to filter rows that allow you to insert partial data from the another\_table into the table.

### Set A

Consider the tables created in previous assignments .Type and execute the below statements for these tables. Write the output of each statement & justify your answer

1. INSERT INTO sales\_order(s\_order\_no,s\_order\_date,client\_no) VALUES ('A2100', now(), 'C40014');
2. INSERT INTO client\_master values('A2100','NAVEEN','Natraj apt','pune\_nagar road','pune',40014);
3. Insert into client\_master values ('A2100','NAVEEN',NULL,'pune\_nagar road','pune',40014);
4. UPDATE emp SET netsal= net\_sal\_basic\_sal\*0.15;
5. UPDATE student  
SET name='SONALI',address='Jayraj apartment' WHERE stud\_id=104 ;
6. DELETE from emp;
7. DELETE from emp WHERE net\_sal<1000;

### Set B

1. Create the following tables (primary keys are underlined.). Property(pno ,description,area)  
Owner(oname, address,phone)

An owner can have one or more properties, but a property belongs to exactly one owner . Create the relations accordingly ,so that the relationship is handled properly and the relations are in normalized form (3NF).

- a) Insert two records into owner table.
- b) insert 2 property records for each owner .
- c) Update phone no of "Mr. Nene" to 9890278008
- d) Delete all properties from "pune" owned by " Mr. Joshi"

2. Create the following tables (primary keys are underlined.).

Emp(eno,ename,designation,sal)          Dept(dno,dname,dloc)

There exists a one-to-many relationship between emp & dept.Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

- a) Insert 5 records into department table
- b) Insert 2 employee records for each department.
- c) increase salary of "managers" by 15%;
- d) delete all employees of deparment 30;
- e) delete all employees who are working as a "clerk"
- f) change location of department 20 to 'KOLKATA'.

3. Create the following tables (primary keys are underlined.)

Sales\_order(s\_order\_no,s\_order\_date)

Client(client\_no, name, address)

A client can give one or more sales\_orders , but a sales\_order belongs to exactly one client. Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

- a) insert 2 client records into client table
- b) insert 3 sales records for each clientchange order date of client\_no 'C004' to 12/4/08
- c) delete all sale records having order date before 10th feb. 08
- d) delete the record of client "joshi"

### Set C

**Create the following tables(Primary keys are underlined)**

Machine (mno, name, mtype, mcost)

Part (pno, pname, pdesc)

**Constraints** : Primary Key constraints, machine name not null, foreign key

Machine & Parts are related with one-to-many relationship.

Create the relations accordingly,so that the relationship is handled properly and the relations are in normalized form(3NF) and insert 5 records into each table.

**Solve the following queries:**

- a) Increase the cost of machine by 10%
- b) List all parts whose machine cost is greater than 10001.

### Assignment Evaluatio

0: Not Done [ ]

1: Incomplete [ ] 4:

2:Late Complete[] 5:

3: Needs Improvement [ ]

Complete [ ]

Well Done [ ]

**Signature of Instructor**

## Assignment No.9

### 1.Simple queries

### 2.Aggregate queries

**Objective:** To understand & get a Hands-on practice on Select statement What is an aggregate function?

An aggregate function produced a single result for an entire group or table.

Aggregate functions are used to produce summarized results. They operate on sets of rows. They return results based on groups of rows. By default, all rows in a table are treated as one group. The GROUP BY clause of the select statement is used to divide rows into smaller groups.

List of aggregate functions

Name	Description
COUNT	This function returns the number of rows or non NULL values for a column
SUM	This function returns the sum of a selected column.
MAX	This function returns the largest value of a specific column.
MIN	This function returns the smallest value of a specific column.
AVG	This function returns the average value for a specific column.

Syntax

aggregate\_name (expression [...][ order\_by\_clause])

OR

aggregate\_name (ALL expression [...][ order\_by\_clause])

OR

aggregate\_name (DISTINCT expression [...][ order\_by\_clause] ) OR

aggregate\_name (\* )

### Set A

Create a table employee with attributes empno, name, address, salary and deptno. Insert atleast 10 records into the same. Execute each query

Execute following select queries .

1. Select \* from emp;
2. Select empno, name from emp;
3. Select distinct deptno from emp;
4. Select \* from emp where deptno = \_\_\_\_\_;
5. Select \* from emp where address = 'pune' and sal > \_\_\_\_\_;
6. Select \* from emp where address = 'pune and salary between \_\_\_\_\_ and \_\_\_\_\_;
7. Select \* from emp where name like '---%'
8. Select \* from emp where name like '%and%'



9. Select \* from emp where salary is null;
10. Select \* from emp order by eno;
11. Select \* from emp order by deptno, enodesc;
12. Select deptno as department, sum(salary) as total from emp group by deptno order by deptno;
13. Select deptno as department , count(eno) as total\_emp from emp group by deptno having count(eno) > \_\_\_\_\_ order by deptno;
14. select avg(salary) from emp;
15. select max(salary),deptno from emp group by deptno having max(sal) > \_\_\_\_\_;
16. select deptno, min(salary) from emp order by deptno;
17. update emp set salary = salary + 0.5\*salary where deptno = (select deptno from department where dname = 'finance');
18. update emp set deptno = (select deptno from department where dname = 'finance') Where deptno = (select deptno from department where dname = 'inventory');
19. insert into emp\_backup(eno,ename) values(select eno,ename from emp);
20. delete from emp where deptno = (select deptno from department where dname='production');

### Set B

Prerequisite : Students should know the normalization concept

Consider the relations

Person (pnumber, pname, birthdate, income),

Area (aname, area\_type).

An area can have one or more person living in it , but a person belongs to exactly one area. The attribute 'area\_type' can have values as either urban or rural.

Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

Assume appropriate data types for all the attributes. Add any new attributes as required, depending on the queries. Insert sufficient number of records in the relations / tables with appropriate values as suggested by some of the queries.

Write select queries for following and execute them.

1. List the names of all people living in ' \_\_\_\_\_ 'area.
2. List details of all people whose names start with the alphabet ' \_ ' & contains maximum \_ alphabets in it.
3. List the names of all people whose birthday falls in the month of \_\_\_\_\_.
4. Give the count of people who are born on ' \_\_\_\_\_ '.
5. Give the count of people whose income is below \_\_\_\_\_.
6. List names of all people whose income is between \_\_\_\_\_ and \_\_\_\_\_;
7. List the names of people with average income
8. List the sum of incomes of people living in ' \_\_\_\_\_ '.
9. List the names of the areas having people with maximum income (duplicate areas must be omitted in the result)
10. Give the count of people in each area
11. List the details of people living in ' \_\_\_\_\_ ' and having income greater than \_\_\_\_\_;
12. List the details Of people, sorted by person number
13. List the details of people, sorted by area, person name
14. List the minimum income of people.
15. Transfer all people living in 'pune' to 'mumbai'.
16. delete information of all people staying in 'urban' area

**Set C**

**Create the following tables(Primary keys are underlined):**

Sailors(sid,sname,rate,age)

Boats(bid,bname,colour)

Reserves(sid,bid,date)

Sailors and boats are related many to many.

Create the relations accordingly,so that the relationship is handled properly and the relations are in normalized form(3NF) and insert 5 records into each table.

**Draw ER diagram for given relational schema and show normalization. Solve the following queries:**

- a) Find all the sailors with a rating above 8.
- b) Find the ages of sailors whose name begins and ends with 'P'.
- c) Find name of sailors who have reserved red and greenboats.

**Assignment Evaluation**

0: Not Done [ ]

3: Needs Improvement [ ]

1: Incomplete [ ]

4: Complete [ ]

2:Late Complete [ ] 5:

Well Done [ ]

**Signature of Instructor**

### **Assignment No.10 Queries with set operations**

**Objective:** To understand & get a Hands-on practice using set operations (union ,intersect and except) with select statement.

**1. Union**

**Use:** Returns the union of two sets of values, eliminating duplicates.

**Syntax:** <select query> Union<select query>

**Ex.:** Select cname from depositor Union Select cname from borrower;

**2. Union all**

**Use:** returns union of two sets of values ,retaining all duplicates

**Syntax:** <select query> Union all<select query>

**Ex.:** Select cname from depositor Union allSelect cname from borrower;

**3. Intersect**

**Use:**returns the intersection of two sets of values ,eliminating duplicates

**Syntax:** <select query> intersect<select query>

**Ex.:** Select cname from depositor intersect Select cname from borrower;

**4. Intersect all**

**Use:** returns intersection of two sets of values ,retaining all duplicates

**Syntax:** <select query> intersect all<select query>

**Ex.:** Select cname from depositor intersect all Select cname from borrower;

**5. Except**

**Use:** returns the difference between two sets of values.i.e returns all values of set1 not contained in set2,eliminates duplicates

**Syntax:** <select query> except<select query>

**Ex.:** Select cname from depositor **Except** Select cname from borrower;

**6. Except all**

**Use:** returns the difference between two sets of values.i.e returns all values of set1 not contained in set2, retains all duplicates

**Syntax:** <select query> except all<select query>

**Ex.:** Select cname from depositor **Except** Select cname from borrower;

**Note:** To use the INTERSECT operator, the columns that appear in the SELECT statements must follow the rules below:

1. The number of columns and their order in the SELECT clauses must be the same.
2. The data types of the columns must be compatible.

#### **Set A**

Consider the following relations, non-teaching, teaching, department.

One department can have one or more teaching & non-teaching staff, but a teaching or non-teaching staff belongs to exactly one department. Hence dno is a foreign key in the both the relations. Create these relations in your database .

Non-teaching ( empnoint primary key, name varchar(20), address varchar(20), salary int,dno references department)

Teaching(empnoint primary key, name varchar(20), address varchar(20), salary int,dno references department)

Department (dnoint primary key,dname)

- insert at least 10 records into both the relations.
- type the following select queries & write the output and the business task performed by each query

1. Select empno from non-teaching union select empno from teaching;
2. Select empno from non-teaching union all select empno from teaching;
3. Select name from non-teaching intersect select name from teaching;
4. Select name from non-teaching intersect all select name from teaching;
5. Select name from non-teaching except select name from teaching;
6. Select name from non-teaching except all select name from teaching

### Set B

Create the following relations, for an investment firm emp(emp-id, emp-name, address, bdate) Investor( inv-name ,  
inv-no, inv-date, inv-amt)

An employee may invest in one or more investments, hence he can be an investor. But an investor need not be an employee of the firm.

Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

Assume appropriate data types for the attributes. Add any new attributes , as required by the queries. Insert sufficient number of records in the relations / tables with appropriate values as suggested by some of the queries.

Write the following queries & execute them.

1. List the distinct names of customers who are either employees, or investors or both.
2. List the names of customers who are either employees , or investors or both.
3. List the names of employees who are also investors.
4. List the names of employees who are not investors

### Set C

Employee (emp\_no, emp\_name, address, city, birth\_date, designation,salary)

Project (project\_no, project\_name, status)

Department (Dept\_no, dept\_name, location)

Constraints: Employee designation is either 'manager', 'staff' , 'worker'.

There exists a one-to-many relationship between Department and Employee. Many employees can work on many projects controlled by a department. Create the relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF) and insert 5 records into each table.

Solve the following queries:

- a) Find the details of employee who is having highest salary.
- b) Delete all employees of department 20.
- c) List the names and salary of employees sorted by their salary.

### Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ]

2:Late complete[] 5:

3: Needs Improvement[

4: Complete [ ]

Well Done [ ]

**Signature of Instructor**

**Assignment No.11**  
**Queries & sub-queries, with joining of tables**

To understand & practice session on nested queries & sub-queries using join operations.

**Sub query:**

A sub-query is a select-from-where expression that is nested within another query.

Set membership	the 'in' & 'not in' connectivity tests for set membership & absence of set membership respectively.
Set comparison	the < some, > some, <= some, >= some, = some, <> some are the constructs allowed for comparison. = some is same as the 'in' connectivity. <> some is not the same as the 'not in' connectivity. Similarly sql also provides < all, >all, <=all, >= all, <> all comparisons. <>all is same as the 'not in' construct.
Set cardinality	The 'exists' construct returns the value true if the argument subquery is nonempty. We can test for the non-existence of tuples in a subquery by using the 'not exists' construct. The 'not exists' construct can also be used to simulate the set containment operation (the super set ). We can write "relation A contains relation B" as "not exists (B except A)".

**Set A**

Create the following relation in your database (primary keys underlined) Employee(ename, street, city)

Works(ename, company-name, salary)

Company(company-name, city)

Manages(ename, manager-name )

An employee can work in one or more companies, a company can have one or more employees working in it. Hence the relation 'works' with keyattributes as ename, company-name.

An employee manages one or more employees, but an employee is managed by exactly one employee ( a recursive relationship), hence the relation 'manages' with key ename.

Insert sufficient number of records in the relations / tables with appropriate values as suggested by some of the queries.

Type the following queries , execute them and give the business task performed by each query

1. select ename from works w where salary >= all (select max(salary) from works);
2. select ename form works w where salary = (select max(salary) from works w1 where w1.company-name = w.company-name);
3. select manager-name from manages where manager-name in(select ename from works where company-name = "\_\_\_\_\_");
4. select manager-name from manages where manager-name not in(select ename from works where company-name = "\_\_\_\_\_");
5. select ename from works w where salary > some (select salary from works where company- name not in (select company-name from company where city = "\_\_\_\_\_"));
6. select ename from employee e where city = ( select city from employee e1 , manages m where m.ename = e.ename and m.manager-name = e1.ename);
7. select \* from employee where ename in (select manager-name from manages)
- 8 select city count(\*) from employee group by city having count(\*) >= all (select count(\*) from

employee group by city)

9. select ename from works w where salary <> all (select salary from works where ename<>w.ename);

10. select company-name, sum(salary) from works w groupby company-name having sum(sal) >= all ( select sum(sal) from works group by company-name)

11. select ename from employee e where city in('\_\_\_\_\_', '\_\_\_\_\_');

12. select ename from employee e where city = (select city from company c, works w where w.ename = e.name and c.company-name = w.company-name);

### Set B

Create the following relations :

Emp(eno,name,dno,salary)

Project(pno,pname,control-dno,budget)

Each employee can work on one or more projects, and a project can have many employees working in it. The number of hours worked on each project , by an employee also needs to be stored.

Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

Assume appropriate data types for the attributes. Add any new attributes , new relations as required by the queries.

Insert sufficient number of records in the relations / tables with appropriate values as suggested by some of the queries.

Write the queries for following business tasks & execute them.

1. list the names of departments that controls projects whose budget is greater than . 2.list the names of projects, controlled by department No , whose budget is greater than atleast one project controlled by department No .
3. list the details of the projects with second maximum budget
4. list the details of the projects with third maximum budget.
5. list the names of employees, working on some projects that employee number is working.
6. list the names of employees who do not work on any project that employee number works on
7. list the names of employees who do not work on any project controlled by ' \_\_\_\_\_ ' department
8. list the names of projects along with the controlling department name, for those projects which has atleast employees working on it.
9. list the names of employees who is worked for more than 10 hrs on atleast one project controlled by ' \_\_\_\_\_ ' dept.
10. list the names of employees , who are males , and earning the maximum salary in their department.
11. list the names of employees who work in the same department as ' \_\_\_\_\_ '.
12. list the names of employees who do not live in \_\_\_\_\_ or \_\_\_\_\_.

**Set C**

**Execute following queries on the relations mentioned in above case study**

1. list the names of projects along with the controlling department name, for those projects which has atleast \_\_\_\_\_ employees working on it.
2. list the names of employees who is worked for more than 10 hrs on atleast one project controlled by '\_\_\_\_\_' dept.
3. list the names of employees , who are males , and earning the maximum salary in their department.
4. list the names of employees who work in the same department as '\_\_\_\_\_'.  
5. list the names of employees who do not live in \_\_\_\_\_ or \_\_\_\_\_.

**Assignment Evaluation**

0: Not Done [ ]

1: Incomplete [ ] 4:

2:Late Complete[] 5:

3: Needs Improvement [ ]

Complete [ ]

Well Done [ ]

**Signature of Instructor**

## Assignment No.12

### Queries & sub queries, with joining of table

Execute the following queries on the table created in previous assignments.

#### Set A

##### Project-Employee database

Consider the database maintained by a company which stores the details of the projects assigned to the employees.

Following are the tables:

PROJECT (PNO INTEGER, P\_NAME CHAR(30), PTYPE CHAR(20), DURATION INTEGER)

EMPLOYEE (ENO INTEGER, E\_NAME CHAR (20), QUALIFICATION CHAR (15), JOINDATE DATE)

##### The relationship is as follows:

PROJECT - EMPLOYEE: M-M Relationship , with descriptive attributes as start\_date (date), no\_of\_hours\_worked (integer).

#### Solve the Queries

1. Find the names of the employees starting with 'A'.
2. Find the details of employees working on the project "System".
3. Find the employee numbers of the employees, who do not work on project "Robotics".
4. Get employee number of the employee, who works on at least one project that employee number '2000' works on.
5. List the names of the first three employees in alphabetical order.
6. Find the names of the employees whose duration is more than three years.

#### Set B

##### Bank database

Consider the following database maintained by a Bank. The Bank maintains information about its branches, customers and their loan applications.

##### Following are the tables:

BRANCH (bid integer, brname char (30), brcity char (10))

CUSTOMER (cno integer, cname char (20), caddr char (35), city (20))

LOAN\_APPLICATION (lno integer, lamtrequired money, lamtapproved money, l\_date date)

##### The relationship is as follows:

BRANCH, CUSTOMER, LOAN\_APPLICATION are related with ternary relationship.

TERNARY (bid integer, cno integer, lno integer).

#### Solve the Queries

1. Find the names of the customers for the "Aundh" branch.
2. List the names of the customers who have received loan less than their requirement.
3. Find the maximum loan amount approved.
4. Find out the total loan amount sanctioned by "Deccan" branch.
5. Count the number of loan applications received by "M.G.ROAD" branch.
6. List the names of the customer along with the branch names who have applied for loan in the month of September.



**Set C****Student- Teacher database**

Consider the following database maintained by a school. The school maintains information about students and the teachers. It also gives information of the subject taught by the teacher.

**Following are the tables:**

STUDENT (sno integer, s\_name char(30), s\_class char(10), s\_addr char(50)) TEACHER (tno integer, t\_name char (20), qualification char(15),experience integer)

**The relationship is as follows:**

STUDENT-TEACHER: M-M with descriptive attribute SUBJECT.

**Solve the queries**

1. Find the minimum experienced teacher.
2. Find the number of teachers having qualification "Ph. D."
3. List the names of the students to whom "Mr. Patil" is teaching along with the subjects he is teaching to them.
4. Find the subjects taught by each teacher.
5. List the names of the teachers who are teaching to a student named "Suresh".
6. List the names of all teachers along with the total number of students they are teaching.

**Assignment Evaluation**

0: Not Done [ ]

1: Incomplete [ ] 4:

2:Late Complete[] 5:

3: Needs Improvement [ ]

Complete [ ]

Well Done [ ]

**Signature of Instructor**

## Assignment No.13 Case studies

### Set A

#### Business trip database

Consider the business trip database that keeps track of the business trips of salesman in an office.

#### Following are the tables:

SALESMAN (sno integer, s\_name char (30), start\_year year, deptno varchar (10)) TRIP (tno integer, from\_city char (20), to\_city char (20), departure\_date date, return date)

DEPT (deptno varchar (10), dept\_name char(20)) ,expense (eid integer, amount money) The relationship is as follows

DEPT-SALESMAN 1 TO M

SALESMAN - TRIP 1 TO M

TRIP - EXPENSE 1 TO 1

#### Execute the following queries

1. Increase the expenses of all the trips by Rs. 5000.
2. Give the details for trips that exceed Rs. 10,000 in expenses.
3. List the salesman numbers and names of the salesmen who made trips to Calcutta.
4. Delete all the trips made by department "computer" having expenses more than Rs.15000.
5. Find the departments from which the salesmen have done highest number of trips.
6. Find the total expenses incurred by the salesman "Mr. Patil".

### Set B

#### Warehouse Database

CITIES (city char (20), state char(20))

WAREHOUSES (wid integer, wname char (30), location char(20)) STORES

(sid integer, store\_name char(20), location\_city char(20))

ITEMS (itemno integer, description text, weight decimal(5,2), cost decimal(5,2) ) CUSTOMER(cno integer, cname char(50), addr varchar(50), c\_city char(20)) ORDERS(o\_no int, o\_date date)

#### The relationship is as follows

CITIES- WAREHOUSES 1 TO M WAREHOUSES

- STORES 1 TO M CUSTOMER –

ORDERS 1 TO M

ITEMS – ORDERS M TO M relationship with descriptive attribute ordered\_quantity STORES-ITEMS

M TO M RELATION with descriptive attribute quantity

#### Solve the following queries.

1. Find the item that has minimum weight.
2. Find the different warehouses in "Pune".
3. Find the details of items ordered by a customer "Mr. Patil".
4. Find a Warehouse which has maximum stores.
5. Find an item which is ordered for minimum number of times.
6. Find the details orders given by each customer.

### Set C

movie database

movies(m\_name, release\_year, budget)

actor(a\_name, role, charges, a\_address)

producer(producer\_id, name, p\_address)

each actor has acted in one or more movies. each producer has produced many movies and each movie can be produced by more than one producers. each movie has one or more actors acting in it, in different roles.

create the relations accordingly, so that the relationship is handled properly and the relations are in normalized form(3nf).

insert sufficient number of appropriate records. solve the queries:

1. list the names of actors who have acted in at least one movie, in which ' \_\_\_\_\_ ' has acted.
2. list the names of the movies with the highest budget.
3. list the names of actors who have acted in the maximum number of movies.
4. list the names of movies, produced by more than one producer.
5. list the names of actors who are given with the maximum charges for their movie.
6. list the names of producers who produce the same movie as ' \_\_\_\_\_ '.
7. list the names of actors who do not live in \_\_\_\_\_ or \_\_\_\_\_ city.

### Assignment Evaluation

0: Not Done [ ]

1: Incomplete [ ] 4:

2:Late Complete[ ]

3: Needs Improvement [ ]

Complete [ ]

5:Well Done [ ]

**Signature of Instructor**



Savitribai Phule Pune University  
F.Y.B.Sc Computer Science Practical Examination  
Semester I (2019 pattern)  
Lab Course 113 : (Problem Solving using Computer and 'C' Programming  
& Database Management Systems

Duration: 3 Hours

Maximum Marks: 35

**Section I : Problem Solving using Computer and 'C' Programming** [15 marks]

- Q 1) A i. Write a 'C' program to calculate area and perimeter of a rectangle. [5 marks]  
 ii. Write a 'C' program to calculate the sum of factors of a number. [10 marks]

OR

- Q 1) A Write a 'C' program to check if a matrix is upper triangular. [15 marks]

**Section II : Database Management Systems** [15 marks]

Consider the following database

Room (room\_no, room\_name, room\_type, charges)

Guest(Guest\_code, Gname, city)

The relationship is as follows: Room-Guest: **one-to-one**. room\_type can have values as either 'AC' or 'NonAC'.

- Q 2) A Create the above database in PostGreSQL and insert sufficient records. [5 marks]  
 B Execute the following queries in PostGreSQL (any 3) [6 marks]
- i. List the details of the rooms having charges between 5000 and 10000.
  - ii. List the names of the guests in the sorted order by city name.
  - iii. List the minimum charges of a room.
  - iv. Increase the charges of all AC rooms by 15%.
  - v. List the names of all the NONAC rooms whose charges are more than 10000.
- C Write a query to List the name of the guest to whom the room with highest charges is allotted. [4 marks]

OR

Create a view to list the names of all the NonAC rooms that have their charges greater than at least one of the 'AC' room.

- Q 3) Viva [5 marks]

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Principles of Human Resource Management**  
**Course Code– GC - 301**  
**Credits - 3**

**Depth of the Course:** Fundamental knowledge

**Course Objectives:**

1. To introduce the basic concepts of Human Resource Management.
2. To cultivate right approach towards Human Resource and their role in business.
3. To create awareness about the various trends in HRM among the students.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	<b>Introduction to HRM</b>	<b>Introduction to HRM-</b> Meaning, Definition, Features, Scope, Objectives, Importance, Principles of HRM, Evolution of HRM, Functions of HRM, Challenges of HRM, Role of HR Manager, Difference between HRM& Personnel Management, Challenges before HRM	<ol style="list-style-type: none"> <li>1. To understand the basic concept of HRM and develop knowledge about the various functions of HRM.</li> <li>2. To understand the different roles the HR performs in an organisation</li> </ol>
2	<b>Job Analysis &amp; Planning for Human Resources</b>	<b>Job Analysis-</b> Meaning, Definition, Objectives, Benefits, Methods, Job Analysis Components- Job Description, Job Specification, Job Evaluation <b>Human Resource Planning(HRP)-</b> Meaning, Definition, Objectives, Process, Factors Influencing the Estimation of Human Resource in Organisation, Advantages & Limitations/Barriers of HRP. <b>Caselets on Job Analysis &amp; Human Resource Planning</b>	<ol style="list-style-type: none"> <li>1. To make the students understand how Job Analysis &amp; Human Resource Planning play an important role in the Organisation.</li> <li>2. To develop an understanding of the different methods of Job Evaluation &amp; Process of HRP in Specific Organisational functioning.</li> </ol>
3	<b>Career Planning , Employee Morale &amp; Job Satisfaction</b>	<b>Career Planning-</b> Meaning, Definition, Objectives, Process, Benefits and Stages. <b>Employee Morale &amp; Job Satisfaction-</b> <b>Employee Morale-</b> Meaning, Definition, causes of low Morale, Job Satisfaction- Meaning, Definition, Factors contributing to Job Satisfaction, Measures to increase Job Satisfaction, Advantages of Job Satisfaction	<ol style="list-style-type: none"> <li>1. To cultivate the knowledge about Career Planning, Employee Morale &amp; Job Satisfaction among students.</li> <li>2. To provide knowledge to the students regarding Career Planning which will help/motivate them to</li> </ol>

		<b>Caselets on Career Planning, Employee Morale &amp; Job Satisfaction.</b>	climb-up the Career Ladder through higher performance in the organisation. 3. To study the factors contributing to Job Satisfaction and its benefit in the Organisation.
4	<b>HRM in Changing Environment &amp; Trends in HRM</b>	Work force Diversity, Technological Changes & HRM, International HRM, E- Human Resource Management, Human Resource Information System (HRIS), HRM in Virtual Organisations, Work from Home, Out-Sourcing, Changing Role of HRM.	<ol style="list-style-type: none"> <li>1. To make the students aware about Changing Environment of HRM.</li> <li>2. To understand the different HRM trends.</li> </ol>

### Teaching Methodology

Teaching Hours Theory + Tutorials /Project Practical –as applicable	Innovative methods to be used	Expected Outcome
<b>Unit 1 (13 hrs)</b>	Interactive teaching methods to be adopted. Role-Play on Challenges before HRM & Ice breaking sessions can be conducted for effective learning. Student Presentations.	<ol style="list-style-type: none"> <li>1. Describe the basic concept of HRM.</li> <li>2. Develop knowledge about the functions and different roles of HR Manager.</li> <li>3. Understand the challenges before HRM</li> </ol>
<b>Unit 2 (13 hrs)</b>	Job Analysis Report. Caselets solution sessions and discussion on the same.	<ol style="list-style-type: none"> <li>1. Understanding the importance of Job Analysis &amp; Human Resource Planning in the Organisation.</li> <li>2. Develop the Problem- solving and decision making skills.</li> </ol>
<b>Unit 3 (13 hrs)</b>	Employee Morale & Job Satisfaction Survey-its basic analysis & Presentation. Caselets solution sessions and its discussion.	<ol style="list-style-type: none"> <li>1. Development of basic ability to think about Employee Morale and Job Satisfaction.</li> <li>2. Development of problem-solving and decision-making skills.</li> </ol>

<b>Unit 4 (9 hrs)</b>	Student Presentations. Lab Activity.	<ol style="list-style-type: none"> <li>1. Understand the Changing Environment of HRM and its effects.</li> <li>2. The students must learn the recent HRM trends with the help of Lab Activities.</li> </ol>
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### Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
<b>I</b>	<b>1. Role Play.</b>	<b>30</b>	<b>25% MCQ 35% short notes 40% long answers</b>
<b>II</b>	<b>1. Report. 2. Caselet Solution &amp; Discussion</b>		
<b>III</b>	<b>1. Survey Analysis &amp; Presentation. 2. Caselet Solution &amp; Discussion.</b>		
<b>IV</b>	<b>1. Lab Activity 2. Presentation</b>		
<b>Total –</b>		<b>30</b>	<b>70</b>

### Suggested References:

Sr. No.	Title of the Book	Author/s	Publication	Place
<b>1</b>	Human Resource Management	L. M. Prasad	Sultan Chand & Company Ltd.	New Delhi
<b>2</b>	Human Resource Management	K. Ashwathappa	Tata McGraw Hill	New Delhi
<b>3</b>	Personnel Management	C. B. Mamoria	Himalaya Publishing House	Mumbai
<b>4</b>	Personnel & Human Resource Management	A. M. Sharma	Himalaya Publishing House	Mumbai
<b>5</b>	Human Resource Management	S. S. Khanka	Sultan Chand & Company Ltd.	New Delhi



**S.Y. BBA Semester III (CBCS) Pattern 2019**

**Supply Chain Management**

**Course Code: GC - 302**

**Credits -3**

**Depth of the Course-** Reasonable working knowledge.

**Course Objectives:**

1. To enable the students to have a comprehensive understanding of Supply Chain Management.
2. To understand key concepts and issues of Logistics and Inventory Management.
3. To understand Warehousing and its role in Space Management.

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose &amp; Skills to be develop</b>
1	<b>Introduction to Supply Chain Management (SCM)</b>	Concept, Objectives and Functions of Supply Chain Management, Supply Chain Strategy, Global Supply Chain Management, Value Chain and Value Delivery Systems for SCM, Bull-Whip Effect, Concept, Importance and Objectives of Green Supply Chain Management.	<ul style="list-style-type: none"><li>• To understand the functions of Supply Chain Management.</li><li>• To know what is Bull-Whip Effect.</li><li>• To understand the concept of Green Supply Chain Management.</li></ul>
2	<b>Manufacturing and Warehousing</b>	Manufacturing Scheduling, Manufacturing Flow System, Work- Flow Automation, Material Handling System Design and Decision.Warehousing and Store Keeping, Strategies of Warehousing and Storekeeping, Space Management.	<ul style="list-style-type: none"><li>• To know the process of Work Flow Automation.</li><li>• To understand Space Management.</li><li>• To acquaint the students with different Strategies of Warehousing.</li></ul>
3	<b>Logistics Management and IT in Supply Chain Management</b>	Logistics Management, Integrated Logistics Management, Logistics Planning and Strategy, Inventory Management and its Role in Customer Service. Information and Communication Technology	<ul style="list-style-type: none"><li>• To learn the methods of Logistics Planning.</li><li>• To know the role of Inventory Management in Customer Service.</li></ul>

		in SCM, Role of IT in SCM, Current IT Trends in SCM, RFID, Barcoding. Retail SCM, Problems and Prospects.	<ul style="list-style-type: none"> <li>To understand the role of Information Technology in SCM.</li> </ul>
4	<b>Key Operation Aspects in Supply Chain</b>	Supply Chain Network Design, Distribution Network in Supply Chains, Channel Design, Factors Influencing Design, Role and Importance of Distributors in SCM, Role of Human Resources in SCM. Issues in Workforce Management and Relationship Management with Suppliers, Customers and Employees, Linkage between HRM and SCM.	<ul style="list-style-type: none"> <li>To learn the Supply Chain Network Design.</li> <li>To know the Role of Distributors in SCM.</li> <li>To understand Relationship Management with Customers and Employees</li> </ul>

### Teaching Methodology:

Unit No.	No. of lectures	Innovative Methods to be used		Expected Outcome
1	12	Visit any industry and list out the activities which come under Supply Chain Management  Role play of Bull-Whip Effect. Group discussion on Green Supply Chain Management.	Prepare a chart on Manufacturing Flow System	<ul style="list-style-type: none"> <li>The students must understand the functions of Supply Chain Management.</li> <li>The students must gain practical knowledge of Bull-Whip Effect</li> </ul>
2	10	Take students out to different Plant Locations to make them understand the Work-Flow Automation Visit a company and List out Space Management techniques used by them.	Prepare a write-up on storekeeping with a live example .	<ul style="list-style-type: none"> <li>The students must understand the importance of Space Management.</li> <li>The students must understand different types of Plant layout and their SCM</li> </ul>

3	13	<p>With the help of case study teach different methods of Logistic Management in an industry.</p> <p>Analysis of role of Inventory Management in Customer Service.</p> <p>List out the functions of IT in SCM</p>	A mini presentation on Current IT Trends in SCM	The student must learn different methods of Logistic Management. The students must understand the role of Information Technology in SCM
4	13	<p>Group discussion Role of Human Resources in SCM.</p> <p>Describe the Functions of Quality Circles in an industry</p>	Prepare a research based report on Issues in Workforce Management and Relationship Management with Suppliers,	<p>To understand the various Operation Aspects in Supply Chain</p> <p>To understand the linkage between HRM and SCM</p>

### Evaluation Methods:

Unit No	Internal Evaluation	External Evaluation
1	<p>1 MCQ on concept meaning, classification of SCM</p> <p>2 Open Book Test</p> <p>3 Presentation on Value Chain and Value Delivery Systems for SCM.</p>	<p><b>25% MCQ</b></p> <p><b>35% Short notes</b></p> <p><b>40% Long answers</b></p>
2	<p>1 Presentations on Different Material Handling System Design used by companies.</p> <p>2 Case Study on actual factors affecting Store Keeping.</p> <p>3 Chart making on Manufacturing Flow System.</p>	
3	<p>1 MCQ on Logistics Management</p> <p>2 Situation Analysis- Problems and Prospects of Retail in</p>	

	SCM. 3 Presentations on Role of IT in Supply Chain Management	
4	1 Case study on: Issues in Workforce Management 2 Situation Analysis of actual factors affecting Distributors in SCM	
<b>Total</b>	<b>30</b>	<b>70</b>

### Suggested References:

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Supply Chain Management for Global Competitiveness	B.S.Sahay.	Macmillan India Limited	India
2	Supply Chain Management	Sunil Chopra, Peter Meindl & D.V. Kalra.	Pearson Education	UK
3	The Supply Chain Handbook	James A. Tompkins, Dale A. Harmelink.	Tompkins Press	UK
4	Supply Chain Logistics Management	Donald Bowersox, David Closs and M. Bixby Cooper	McGraw-Hill Education;	India
5	Supply Chain Management: Text and Cases	Vinod V Sople	Pearson Education	UK
6	Logistical Management	Donald J.Bowersox & David J.Closs.	Tata McGraw-Hill	New Delhi
7	Designing and Managing the Supply Chain	David Simchi-Levi.	Tata McGraw-Hill Editions	New Delhi

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Global Competencies and Personality Development**  
**Course Code-GC- 303**  
**Credits – 03**

**Depth of the course:** Reasonable knowledge about Competencies and Personality Development.

**Course objectives:**

1. To build self-confidence, enhance self-esteem, and improve overall personality of the students.
2. To enhance global and cultural competencies of the students.
3. To groom the students for appropriate behaviour in social and professional circles.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	<b>Introduction to Personality and its Development</b>	<ul style="list-style-type: none"> <li>• Definition and nature of personality</li> <li>• Characteristics of good personality</li> <li>• Determinants of personality development</li> <li>• Theories of personality development               <ol style="list-style-type: none"> <li>i. Psychoanalytical Theory by Sigmund Freud</li> <li>ii. Trait Theory by Allport and Big Five model</li> <li>iii. Social Cognition Theory by Albert Bandura</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• To study the nature and meaning of personality.</li> <li>• To understand various factors affecting personality development of an individual.</li> <li>• To learn various theories of personality development.</li> </ul>
2	<b>Global Competence and Self Development</b>	<ul style="list-style-type: none"> <li>• Meaning and need of global competence.</li> <li>• Characteristics of globally competent individual (life-long learning, understanding cultural differences, adaptability, comfortable with change,</li> </ul>	<p>To understand the concept of Global Competence.            To decipher the characteristics of globally competent individual and encourage students to develop that characteristics among themselves.            To develop self- esteem and self-confidence of the students.</p>

		<p>problem-solving ability, critical and comparative thinking).</p> <ul style="list-style-type: none"> <li>• Building self-esteem and self confidence</li> <li>• SWOC Analysis and Personal Goal Setting</li> </ul>	<p>To introduce the concept of SWOC Analysis and encourage the students for personal Goal setting by providing theoretical as well as practical knowledge.</p>
3	<b>Development of Social and Interpersonal Skills</b>	<ul style="list-style-type: none"> <li>• Effective communication skills, Preparation for self-introduction.</li> <li>• Working on attitude i.e. Aggressive, assertive and submissive</li> <li>• Development of leadership skills and introduction to Leadership styles.</li> <li>• Team Building; develop ability to work under pressure, flexibility at workplace.</li> <li>• Social empathy, building blocks of social empathy and development of social empathy.</li> <li>• Social Responsibilities</li> <li>• Workplace ethics</li> </ul>	<ul style="list-style-type: none"> <li>• To explain various techniques for effective communication.</li> <li>• To train students for impressive self- introduction.</li> <li>• To introduce various methods for positive attitude development.</li> <li>• To explain various styles and qualities of leaders and encourage students for effective leadership.</li> <li>• To understand the structure of team and to develop ability to work under pressure and flexibility at workplace.</li> <li>• To develop social empathy and explain social responsibilities of the individual.</li> <li>• To introduce various workplace ethics.</li> </ul>
4	<b>Projecting a Positive Social Image</b>	<ul style="list-style-type: none"> <li>• Definition and importance of social image</li> <li>• Grooming basics and use of body language</li> <li>• Time management</li> <li>• Public-speaking</li> <li>• Proper e-mail and telephone etiquettes</li> <li>• International and social etiquettes</li> <li>• Social graces and table manners</li> </ul>	<ul style="list-style-type: none"> <li>• To explain the importance of positive social image of the individual.</li> <li>• To introduce basics of grooming and effective use of body language.</li> <li>• To explain the importance of the time management.</li> <li>• To develop ability of effective public speaking.</li> <li>• To train the students for writing e-mails and explain various telephone etiquettes.</li> <li>• To study various social and international etiquettes and table manners.</li> </ul>

### Teaching Methodology:

Teaching Hours	Innovative methods to be used	Expected Outcome
<b>Unit 1-12</b>	Selected video films on the theories of personality. Interactive sessions. Reading of reference books, magazines and articles and preparing notes by students.	To learn various theories of personality development.
<b>Unit 2-11</b>	Flipping the classroom- students will gather information by using various tools and techniques available. Activities for SWOC and goal setting, Expert Talk can be organized.	To understand the concept of Global Competence. SWOC Analysis by students and encourage the students for personal Goal setting by providing theoretical as well as practical knowledge.
<b>Unit 3-13</b>	Collaboration-few selected students can take responsibility to guide other students through the role play as a mentors, supervisors for the students. It also teaches students empathy, negotiation skills, teamwork, and problem-solving skills. Work together as a team- Project work can be given to the students in groups.	<ul style="list-style-type: none"> <li>• To understand the structure of team as well as to develop ability to work under pressure and flexibility at work place.</li> <li>• To develop social empathy and explain social responsibilities of an individual.</li> </ul>
<b>Unit 4-12</b>	Classes outside the classroom to understand social etiquettes, visit to corporate offices, seminars and conferences, public speech event etc. Activity of e-mail writing can be given to the students.	<ul style="list-style-type: none"> <li>• The students should groom themselves and effective use of body language.</li> <li>• To develop the skills of managing the time.</li> <li>• To develop ability of effective public speaking.</li> <li>• To train the students for writing e-mails.</li> </ul>

### Evaluation:

Unit No.	Internal Evaluation	External Evaluation
<b>Unit – I</b>	<b>Presentation on Theories of Personality Prepare a chart on successful personalities</b>	

<b>Unit – II</b>	<b>Open book test. Assignments</b>	<b>Fill in the blanks True and False Short answer question - 25% Short notes-35% Long answer questions- 40%</b>
<b>Unit – III</b>	<b>Small project on Effective Communication, Social Empathy and Team Building in a group with time limitation Prepare a small handbook on workplace ethics of by visiting some organization or on the basis of collected information through newspapers, corporate magazines and internet.</b>	
<b>Unit – IV</b>	<b>Power point presentation on international etiquettes, Writing of an e-mail.</b>	
<b>Total –</b>	<b>30</b>	<b>70</b>

#### Suggested references:

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Personality development.	Swami Vivekananda	Adhyaksha Advaita Ashram	India
<b>2</b>	Personality Development and Communication skills.	C Rajya Lakshmi Kalyani, D S Vittal, AnithaRaju,	Himalaya Publishing House.	New Delhi,India
<b>3</b>	Effective Life Management.	Swami Amartyananda	Advaita Ashrama	India
<b>4</b>	Personality Development and Soft Skills.	BarunMitra	Oxford University Press	New Delhi,India
<b>5</b>	Soft Skills- Personality Development for Life Success.	Prashant Sharma	BPB Publication	New Delhi, India
<b>6</b>	Theories of Personality 4th Edition.	Hall CS, Lindsey G and Campbell J B	Wiley	New York



**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Fundamentals of Rural Development**  
**SY BBA Course Code: GC - 304**  
**Credit: 3**

**Depth of the Course: Functional Knowledge about Rural Development**

**Course Objectives:**

1. To understand the development issues related to rural society.
2. To find the employment opportunities for rural youth.
3. To create interest among the rural youth to participate in rural development programmes and schemes for sustainable development.
4. To discourage seasonal and permanent migration to urban areas.

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose and Skills to be develop</b>
1	Introduction to Rural Development	1.1 Concept of Rural Development- Meaning and Definition. 1.2 Scope and Importance of Rural Development. 1.3 Approaches of Rural Development. 1.4 Need of Rural Development.	<ul style="list-style-type: none"> <li>• To provide sound knowledge about rural development.</li> </ul>
2	Rural Development Planning & Management	2.1 Rural Development Planning –District Rural Development Agency (DRDA)- Organisation Structure 2.2 Functions of DRDA 2.3 NGO's and Rural Development 2.4 Self Help Groups (SHG's) formation	<ul style="list-style-type: none"> <li>• The unit will help to gain knowledge regarding working in various Government and NGO's transformation.</li> </ul>

3	Agriculture Enterprise & Agro-based industries.	3.1 Agricultural Entrepreneur- Meaning, Definition and Importance. 3.2 Agri-business Enterprises-Issues and prospectus 3.3 Micro-financing 3.4 Food and Agricultural Marketing and Management of agro products. 3.5 Agro-based industries	<ul style="list-style-type: none"> <li>• It gives opportunities to students to develop good communication skills, gain knowledge of local languages, ability to handle masses and leadership skills.</li> <li>• They should develop problem-solving skills and the ability of working with clients with diverse interests.</li> <li>• Creation of interest of thereby planning for n farming.</li> </ul>
4	Information Technology and Rural Development	4.1 Rural Development and Internet. 4.2 Information & Communication Technology (ICT) for Rural Development 4.3 IT –Enable Services for an e-village 4.4 Challenges of Rural Development	<ul style="list-style-type: none"> <li>• To develop IT Skills.</li> <li>• To develop awareness regarding the challenges of Rural Development.</li> </ul>

### Teaching Methodology:

Teaching Hours Theory + Tutorials /Project Practical	Innovative methods to be used	Expected Outcome
<b>Unit 1 (8 hrs)</b>	<ol style="list-style-type: none"> <li>1. Presentations.</li> <li>2. Group Discussion on scope and importance of rural development.</li> </ol>	<ol style="list-style-type: none"> <li>1. Describes the importance of rural development</li> <li>2. Better understanding of need for rural development</li> </ol>
<b>Unit 2 (14 hrs)</b>	<ol style="list-style-type: none"> <li>1. Debate/ Group discussion on “Role of SHG groups and their effectiveness”.</li> <li>1. Caselets solution sessions and discussion on same.</li> </ol>	<ol style="list-style-type: none"> <li>1. Describes determinants of Rural Development Planning</li> <li>2. Develop the knowledge &amp; ability of the students about the concepts of NGO’s and Rural Development</li> <li>3. Development of understanding of Functions of DRDA</li> </ol>
<b>Unit 3 (14 hrs)</b>	<ol style="list-style-type: none"> <li>1. Visit to Bhimthadijatra to understand concept of agropreneuership</li> <li>2. Visit to financial institutions to understand Micro financing</li> <li>3. Caselets solution sessions and discussion on same.</li> </ol>	<ol style="list-style-type: none"> <li>1. Describes determinants of agropreneuership</li> <li>2. Understanding of problems associated with rural entrepreneurship.</li> <li>3. Understanding the implementation of marketing initiatives</li> </ol>

<b>Unit 4 (12 hrs)</b>	<ol style="list-style-type: none"> <li>1. Role Play on role of internet and rural development.</li> <li>2. Chart presentation on(ICT) for Rural Development</li> <li>3. Project competition on IT –Enable Services for an e-village</li> <li>4. Caselets solution sessions and discussion on same.</li> <li>5. Students should collect the information about any one scheme of rural development and analyse it.</li> </ol>	<ol style="list-style-type: none"> <li>1. Understanding role of internet in rural development.</li> <li>2. Develop the knowledge &amp; ability of the students about the concepts ICT and e-development in villages.</li> <li>3. Understanding challenges of rural development.</li> <li>4. Candidates willing to for further research work, also suitable for the project.</li> </ol>
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### Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
<b>I</b>	<b>1. Power point presentations on sub points</b>	<b>30</b>	<b>25% MCQ</b> <b>35% short notes</b> <b>40% long answers</b> <b>Fill in the blanks</b> <b>True and False</b> <b>Short answer question -25%</b> <b>Short notes -35%</b> <b>Long answer questions -40%</b>
<b>II</b>	<ol style="list-style-type: none"> <li>1. Debate/ Group Discussion Activities.</li> <li>2. Caselets Solution &amp; Discussion</li> </ol>		
<b>III</b>	<b>1. Visit to Bhimthadijatra and other rural initiatives</b>		
<b>IV</b>	<ol style="list-style-type: none"> <li>1. Role Play.</li> <li>2. Caselets Solution &amp; Discussion</li> </ol>		
<b>Total –</b>		<b>30</b>	<b>70</b>

**Suggested references:**

<b>Sr.No.</b>	<b>Title of the Book</b>	<b>Author</b>	<b>Publication</b>	<b>Place</b>
1	Fundamentals of Rural Development	Mary Tahir & Tahir Hussain	I.K International Publishing House	India
2	Rural Development : Concept and Recent Approaches	A .Thomson William A.J.Christopher	Rawat Publications	Jaipur,India
3	Rural Poverty in India	Sib Nath Bhattacharya	Ashish Publishing House	New Delhi
4	Rural Development; Principles, Policies and Management	Katar Singh	SAGE Publication	India
5	Economic Policy and Development	B.L.Mathur	RBSA Publishers	Jaipur,India
6	Indian Economy	V.K.Puri S.K.Sharma	Himalaya Publishing House	Mumbai

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**

**Discipline Specific Electives (DSE- A- MM)**  
**Consumer Behaviour & Sales Management**  
**SY BBA Course Code- A 305 MM**  
**Credits 3+1=4**

**Depth of the Course-**Reasonable Knowledge & Insights in Consumer Behaviour & Sales Management.

**Course Objectives:**

1. To develop significant understanding of Consumer behaviour in Marketing.
2. To understand the relationship between consumer behaviour & Sales Management.
3. To develop conceptual based approach towards decision making aspects & its implementation considering consumer behaviour in Sales Management.

Unit No	Unit Title	Contents	Purpose & Skills to be develop
1.	<b>Introduction and Determinants of Consumer Behaviour</b>	<p><b>Basics:</b> Meaning of Customers &amp; Consumers, Consumer Roles, Consumerism &amp; De-marketing.</p> <p><b>Culture &amp; Sub- Culture:</b> Meaning, Characteristics &amp; Relevance to Marketing Decisions.</p> <p><b>Social Class:</b> Meaning, Measurement, Effect on Lifestyles.</p> <p><b>Social Groups:</b> Meaning &amp; Group Properties &amp; Reference Groups.</p> <p><b>Family:</b> Family Life Cycle &amp; Purchasing Decisions.</p> <p><b>Marketing Mix: Influence</b> of marketing mix variables.</p> <p><b>Personality &amp; Self Concept:</b> Meaning of Personality, Influence on Purchase Decisions.</p> <p><b>Motivation &amp; Involvement:</b> Types of Buying Motives, Motive Hierarchy, Dimensions of Involvement.</p> <p><b>Learning &amp; Memory:</b> Meaning &amp; Principal Elements of Learning, Characteristics of Memory Systems, Recall.</p>	<ul style="list-style-type: none"> <li>• To know the Role &amp; Importance of Consumer Behaviour.</li> <li>• Ability to learn how Consumer Behaviour impacts the Sales of an Organization.</li> <li>• To understand how consumer behaviour is influenced by different environment.</li> <li>• To know about determinants of consumer behaviour affects the marketing system.</li> <li>• To understand the overall effect of concepts upon the consumer behaviour</li> <li>• To develop strategy to influence consumer behaviour.</li> </ul>

		<b>Attitudes:</b> Meaning & Characteristics, Strategies for Changing Attitudes, Intentions Behaviours.	
2	Consumer Decision Making Process	<p><b>Problem Recognition:</b> Types of consumer decisions, types of Problem Recognition, Utilizing problem recognition information</p> <p><b>Search &amp; Evaluation:</b> Types of information, Sources of Information Search, Search, Experience and Credence Aspects - Marketing Implications</p> <p>Situational Influences on Purchase Decisions</p> <p><b>Purchasing Process:</b> Why do people shop? Store &amp; Non-store Purchasing Processes, Purchasing Patterns.</p> <p><b>Post-purchase Evaluation &amp; Behaviour:</b> Consumer Satisfaction, Dissatisfaction, Customer Delight, Consumer Complaint Behaviour, Post- Purchase Dissonance.</p>	<ul style="list-style-type: none"> <li>• To develop the conceptual decision making insights.</li> <li>• To have the right understanding of situations as they influence the consumer behaviour.</li> <li>• To develop the habit of taking calculated risks towards decision making process.</li> </ul>
3	Basics to Sales Management & its Organization	<p><b>Sales Management:</b> Definition and meaning, Objectives, Sales Research, Sales Forecasting methods,</p> <p><b>Sales Planning and control:</b> Goal setting, Performance measurement, diagnosis and corrective actions.</p> <p><b>Sales Organization:</b> Need for Sales Organizations, their structure, Sales Managers Functions and responsibilities, Planning for major customers and sales Budget, Specific Characteristics of a successful salesman.</p>	<ul style="list-style-type: none"> <li>• To provide the basic understanding of the processes followed in sales management</li> <li>• To understand the importance of sales organizations &amp; its impact upon the performance of the organizations.</li> </ul>
4	Training, Managing & Motivating the Sales Force	<p><b>A. Recruiting, Selection and Training of Sales force:</b> Procedures and criteria extensively used as selection tools for recruiting and testing sales ability. Sales Force Job Analysis and Description</p> <p><b>B. Areas of sales Training:</b> Company Specific Knowledge, product knowledge Industry and Market Trend Knowledge, customers and technology – Relationship Selling Process and Customer education. Value added Selling</p> <p><b>C. Motivating the Sales Team:</b> Motivation Programs – Sales Meetings, Sales Contests, Sales Compensating, (Monetary</p>	<ul style="list-style-type: none"> <li>• To provide an understanding of the tools and techniques necessary to effectively Manage &amp; Control the sales function - organization - sales individual.</li> <li>• To understand the importance of target based marketing to achieve desired results for sales organization.</li> </ul>

		compensation, incentive programs as motivators, Non-Monetary compensation – fine tuning of compensation package. Supervising, <b>D. Evaluating Sales Force Performance and Controlling Sales activities:</b> Sales Records and Reporting Systems, Improving Sales Productivity, Ethical and Legal Issues in Sales Management.	
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### Teaching Methodology

Teaching Hours Theory + Tutorials /Project	Innovative methods to be used	Tutorials /Project for 1 credit –	Expected Outcome
Unit I – 10Hrs	Group wise presentation to understand the nuances of Consumer behaviour.	<b>Assignments</b> to practice the basic concepts in consumer behaviour.	To have an adequate understanding of consumer behaviour, its scope, objectives, opportunities and its challenges.
Unit II– 14Hrs	Unguided session based upon the Case Studies, in which strategies are adopted by organizations.	Suggesting an adequate strategy to organizations based upon the analysis of the <b>case study</b> .	To help students develop an understanding towards Strategy building & its effectiveness.
Unit III– 14 Hrs	Group discussion amongst the students for developing innovative sales strategy to be followed by organizations.	<b>Discussion &amp; Analysis</b> of success or failure factors behind the strategies implemented.	To find out alternatives for Dynamic organization to ensure their success in highly competitive sales environment.
Unit IV – 10Hrs	Skit, Role Play, Presentation to propose relevant solutions to overcome dynamic challenges for sales organizations.	Suggestion & implementation of creative strategies designed to cope against distorting challenges of sales environment through <b>role play or skit</b> .	Developing Design Thinking approach to explore opportunities while combating against challenges in highly competitive Sales environment.

## Evaluation

Subject	Internal Evaluation	External Evaluation
<b>Unit – I</b>	MCQ on Consumer Behavioural Concepts Analysis of Marketing Mix, Motivation & Attitude.	<b>25% MCQ</b> <b>35% short notes</b> <b>40% long answers</b> <b>Fill in the blanks</b> <b>True and False</b> <b>Short answer question -25%</b> <b>Short notes -35%</b> <b>Long answer questions -40%</b>
<b>Unit – II</b>	MCQ on Problem Recognition, Search & Evaluation, Purchase Process, Post Purchase evaluation & Behaviour through short answers.	
<b>Unit – III</b>	MCQ on Sales Mgmt, Sales Planning & Control, Sales Organization. Short answers to evaluate the Sales strategy formation & its implementation.	
<b>Unit – IV</b>	MCQs and short answers	
<b>Total –</b>	<b>20+30</b>	<b>50</b>

## Suggested References

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Consumer Behaviour & Sales Management	Still, Cundiff & Govani,	Pearson Education	New Delhi/Mumbai
2	Consumer Behaviour & Sales Management	Havaladar & Cavale	TMGH	Pune
3	Consumer behavior & Sales Mgmt	SL Gupta	Excel books	Pune
4	Consumer behavior & Sales Mgmt	David L.	Tata McGraw Hill	Mumbai
5	Consumer behavior & Sales Mgmt	Batra, Kazmi	Excel books	Mumbai
6	Sales Management,	Bill Donaldson	Palgrave Publications	UK
7	Consumer Behavior - An Indian perspective	Dr. S.L Gupta, Sumitra Pal	Sultan Chand and Sons	New Delhi



**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Discipline Specific Electives (DSE- A- MM)**  
**Retail Management**  
**Course Code- DSE A 306 MM**  
**Credits 2+2=4**

**Depth of the course-** Reasonable knowledge of Retail Management

**Course Objectives**

- 1.To provide basic understanding of forces that shape retail industry
2. To provide understanding of retail operations and strategy
3. To provide understanding of opportunities and challenges in retail industry

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose &amp; Skills to be develop</b>
1	<b>Introduction to Retailing</b>	Structure of retail industry, types of retailers, market segments and channels, market trends, retail life cycle.	Retailing aims to develop students' understanding of retail strategy, retail operations management, innovation in retail, and the key issues impacting growth in retail firms
2	<b>Retailing Strategy</b>	Identifying and Understanding Customers, Customer segmentation, Selecting Target Market, Identifying Market Segments, selecting site locations, Strategic positioning and execution. Establishing and Maintaining Retail Image, Creating In-store Dynamics (Layouts & Plans)	To explore the strategic options available to retailers. To analysis the factors impacting store design and location selection.

3	<b>Managing the Retail Business</b>	Implementing Retail Marketing Plan, Brief Human Resource Requirements, Developing Product and Branding Strategies, Developing Merchandise Plans, Merchandising Strategy,	To study store operations, merchandising and customer management.
4	<b>Future of Retailing</b>	Introduction to recent trends and Technological Advancements in retailing. Omni Channel Retailing, shopping with AR (Augmented reality), Pop up shops, social shopping, private label brands.	To get conversant with the latest tool used in retail industry. To understand the innovative channels to reach out the target customers to sustain in new markets.

### Teaching Methodology

Teaching Hours Theory + /Project	Innovative methods to be used		Expected Outcome
Unit I –10Hrs	Group presentation to understand the perspectives of students of retail industry.	Assignments for practice of basic concepts in retail management.	To have a clear understanding of the retail concepts, its scope, objectives, opportunities and challenges.
Unit II – 14Hrs	Presentation to understand the lay out and customer flow on the floor.	Take an example of a retail store of any MNC to study in store dynamics.	To help students understand the planning process behind a retail business.
Unit III – 14Hrs	Discussion of examples of innovative methods adopted by companies to execute their retail strategy	On the same project find the reasons for the success or failure while analysing the execution strategies adopted by the organization.	Giving insights to the challenges while implementing a plan, in context of retail management.
Unit IV –10Hrs	Demonstration of current trends in retail sector. Brain storming sessions to propose solutions to recent challenges in retail sector.	Application of the innovative methods and their possible outcomes, opportunities and challenges, for the above implemented project.	Developing critical thinking ability to explore various angles while facing challenges in the retail sector.

## Evaluation

Subject	Exposure project Evaluation	External Evaluation
Unit – I	Students are expected to visit Minimum 5 Retail Business Outlets covering all categories like Food & Beverages, Clothing & Apparel, Daily Essentials, Automobile & Electronics Retail and Medicines, etc. Students shall prepare project report on the points like: Store layout, Product display, logistics and SWOC analysis, etc. and Viva-voce will be conducted on the submitted project report.	<b>25% MCQ</b> <b>35% short notes</b> <b>40% long answers</b> <b>Fill in the blanks</b> <b>True and False</b> <b>Short answer question -25%</b> <b>Short notes -35%</b> <b>Long answer questions -40%</b>
Unit – II		
Unit – III		
Unit – IV		
Total –	50	50

## Suggested references

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Retail Management	Chetan Bajaj, Rajnish Tuli	Oxford University Press	New Delhi, India
2	22 immutable laws of Marketing	Al Ries, Jack Trout	Profile Books Ltd.	UK
3	Retail Management	Gibson	Pearson Publication	UK
4	Fundamentals of Retailing	KVS Madaan	Mc Graw Hill	USA
5	Retail Marketing	Swapna Pradhan	TMGH	India
6	Retailing Management	Michael Levy & Barton Weitz	TMGH	India
7	Retail Marketing Management	David Gilbert	Pearson Publication	UK
8	Managing Retailing	Piyush Kumar Sinha & Dwarika Prasad Uniyal	Oxford University Press	New Delhi, India

**Savitribai Phule Pune University**  
**S.Y. BBA Semester III (CBCS) Pattern 2019**  
**Discipline Specific Electives (DSE- B- FM)**  
**Course Title – Management Accounting**  
**Course Code- B 305 FM**  
**Credit 3+1=4**

**Depth of the Course-** Functional knowledge of Management Accounting

**Course Objectives: -**

1. To impart basic knowledge of management accounting.
2. To understand the implications of various financial ratios in decision making.
3. Application and use of various tools of management accounting in the business.

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose &amp; Skills to be develop</b>
1	Introduction	Management Accounting- Definition, Objectives, Scope, Functions, Advantages, Limitations. Distinction between Financial Accounting and Management Accounting. Distinction between Cost Accounting and Management Accounting	To understand the concept and meaning of management accounting. To understand difference between financial accounting, cost accounting and management accounting. To develop decision making skill of the managers with the use of various management accounting tools.
2	Analysis and interpretation of Financial statement	Introduction of Schedule III as per Company Act 2013, (Statement of Profit & Loss, Statement of Balance sheet format) Methods of Analysis- Comparative statements, Common size statements, Trend percentage or trend ratios (Horizontal Analysis), Fund flow Statement. Introduction of ratio Analysis- meaning, necessity & advantages of ratio analysis. Types of Ratio- Liquidity Ratios, Leverage Ratios, Activity Ratios, profitability Ratios	To study schedule III as per Company Act 2013 and understand the format of Statement of Profit & Loss & Statement of Balance sheet of company. To study different methods of analysis. Application of various methods of analysis. Analytical skill for comparing financial position of any business will be developed.

		(Introduction and Problems on following ratios only) Current ratio, Quick ratio, Gross profit ratio, Net profit ratio, Operating expenses ratio, Debt equity ratio, Debtors turnover ratio Stock turnover ratio	
3	Marginal Costing	Marginal Costing- Meaning, definition of marginal cost and marginal costing, Advantages and limitations of marginal costing, Contribution, Profit volume ratio (P/V Ratio), Breakeven Point (BEP), Margin of Safety, problems on contribution, P/Ratio, BEP and MOS	To understand the concept of contribution and breakeven point in business and its application while estimating profitability level. Decision making skill will be developed.
4	Budget & Budgetary control	Budget and budgetary Control-Meaning, Definition, Nature of budget and budgetary control, Types of budget- as per time, functions and variability, Objectives of budget and budgetary control, Steps in budgetary control, advantages and disadvantages of budgetary control, Problems on cash budget.	To understand the concept of contribution and breakeven point in business and its application while estimating profitability level. Decision making skill will be developed. To study the concept of budget and its various types. On the basis of past data, future growth and plans, estimated cash inflow and cash outflow can be prepared. Estimated requirement of funds in future and its application in business can be calculated.

## Teaching Methodology

Teaching + Tutorials Hours	Innovative methods to be used	Tutorials /Project for 1 credit	Expected Outcome
Unit 1- 8	PPT, Group discussion	NA	To understand the concept and meaning of management accounting. To understand difference between financial accounting, cost accounting and management accounting.
Unit 2- 14	PPT, Video, Case study , Group discussion	<ul style="list-style-type: none"> <li>➤ Financial Analysis of any company of three years using trend percentage, comparative statement, ratio analysis.</li> <li>➤ Financial Analysis of two different companies using trend percentage, comparative statement, ratio analysis.</li> </ul>	To understand different methods of analysis and classification of various ratios and its application.
Unit 3- 13	PPT, Video, Case study , Group discussion	NA	To calculate contribution and breakeven point to reach profitability level of any business.
Unit 4- 13	PPT, Video, Case study , Group discussion	<ul style="list-style-type: none"> <li>➤ To prepare budget of any activity or event to be organized in the college.</li> </ul>	To learn how to make various types of budgets as per need and requirement of business.

## Evaluation

<b>Subject Management Accounting</b>	<b>Internal Evaluation</b>	<b>External Paper Pattern (50 Marks)</b>
Unit – I	MCQ/ long question/ short notes	<b>Q.1 A Fill in the blanks 5M)</b> <b>Q.1 B Write Short Notes (Any 2) (10M)</b> <b>Q.2 Long Answer (15M)</b> <b>OR</b> <b>Q.2 Problems on ratio analysis</b> <b>Q.3 Problem on marginal costing (10M)</b> <b>Q.4 Problem on Cash budget(10M)</b> <b>OR</b> <b>Q.4 Long Answer</b>
Unit – II	MCQ/Long questions/ problem/ short notes	
Unit – III	MCQ/Long questions/ problem/ short notes	
Unit – IV	MCQ/Long questions/ problem/ short notes	
<b>Total –</b>	<b>30+ 20 marks for project= 50 Marks</b>	

## Suggested references

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Management Accounting	L.M.Pandey	Vikas Publishing House	Delhi
<b>2</b>	Management Accounting	S.K.R.Paul	New Book Central Agency	
<b>3</b>	Accounting for Management	S.N.Maheshwari, S.K.Maheshwari, Sharad K. Maheshwari	Vikas Publishing House	Delhi
<b>4</b>	Management Accounting	M.Y.Khan, P.K.Khan,	Mcgraw Hill Education	Delhi
<b>5</b>	Management Accounting	AnthonyA.Atkinson, Robert S.Kaplan, Ella Mac Matsumura,G. Arun Kumar, S.mark. Young	Pearson Education	Delhi

**Savitribai Phule Pune University**  
**S.Y. BBA Semester III (CBCS) Pattern 2019**  
**Discipline Specific Electives (DES- B- FM)**  
**Course Title – Banking & Finance**  
**Course Code- B 306 FM**  
**Credits 2+2= 4**

**Depth of the course-** Functional knowledge of banking Operations and various Regulatory Authorities in India.

**Course Objectives**

1. Study of banking function and its operations.
2. To study the functioning of Regulatory Authorities in India.
3. To study recent technology in banking industry.

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose &amp; Skills to be develop</b>
1	Introduction	Introduction- Origin, meaning and definition of bank, evolution of banking in India, structure of banking system in India	Overview of evolution and banking structure in India
2	Functions of Banks	Functions of Banks- 1. Primary functions- Accepting deposits and granting loans 2. Secondary functions- Public utility services and agency services	Students will understand various functions and activities of banks.
3	Regulatory Authorities in India	Reserve Bank of India (RBI) – Role and functions of RBI, Credit control measures, Qualitative and quantitative credit control Insurance Development Authority (IRDA)- Objectives, Powers and functions of IRDA SEBI- Objectives, power and functions of SEBI	Knowledge of functioning and powers various Regulatory Authorities in India.
4	Technology in banking	Need and importance of technology in banking. ATM, Debit card, Credit card, Tele banking, Net banking, mobile banking, RTGS, NEFT, Swift (Society for	Use of technology in banking and study of security measures while using E- banking



		worldwide interbank financial telecommunication) cyber security in E- banking	
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### Teaching Methodology

Teaching Hours Theory + Project -Practical	Innovative methods to be used		Expected Outcome
Unit 1- 10 Lectures	PPT, Video, Group discussion,	Applicable(Project)	Students will understand structure of banking system in India.
Unit 2- 12 Lectures	PPT, Video, Group discussion	Bank Visit	Students will understand functions and operations of banks.
Unit 3- 13 Lectures	PPT, Video, Group discussion	Applicable(Project)	Students will get basic knowledge of function of various regulatory Authorities in India
Unit 4- 13 Lectures	PPT, Video, Group discussion	Applicable(Guest lecture)	Knowledge of how to use new technology in banking operations along with its cyber security.

### Evaluation

<b>Subject Management Accounting</b>	<p><b>Guidelines regarding Exposure project (50 marks)</b>  <b>Students need to prepare Exposure project on the following topics- (Any 3)</b></p> <ol style="list-style-type: none"> <li>1. Guest lecture/ workshop on any topic mentioned in the syllabus.</li> <li>2. Visit to any bank and observe banking functions and operations. (group project)</li> <li>3. PPT on any topic from the syllabus.</li> </ol> <p><b>Conducting survey/ project based on the following themes-</b></p> <ul style="list-style-type: none"> <li>▪ Study of different types of banks &amp; their performance</li> <li>▪ Comparative study of performance of nationalized banks, co- operative banks &amp; foreign banks.</li> <li>▪ Conducting customer survey of banks customers of any specific bank.</li> <li>▪ Awareness &amp; conducting financial literacy among different stake holders of the society (e.g. students, house wives, rural area etc.)- Student can conduct a survey by framing a small questionnaire.</li> </ul> <p><b>Note: Colleges can change the project topics according to their convenience.</b></p>	<p><b>External Evaluation</b>  <b>25% MCQ</b>  <b>35% Short Notes</b>  <b>40% Long Answers</b></p>
	<b>SPPU Project viva= 50 marks</b>	<b>Theory paper = 50 marks</b>

**Suggested references**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Principles and Practices of Banking	Srinivasan D.and others	Macmillan India Pvt Ltd	Delhi
<b>2</b>	Banking and Insurance	O.P.Agarwal	Himalaya	Delhi
<b>3</b>	The Indian Financial System	Vasant Desai	Himalaya	Delhi
<b>4</b>	Financial services and Markets	Dr. S.Gurusamy	Thomas	Delhi
<b>5</b>	Banking Law and Practice in India	Maheshwari	Kalyani publisher	Delhi

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Discipline Specific Electives (DES- C- HRM)**  
**Organisational Behaviour (OB)**  
**Course Code: DSE- C -305 HRM**  
**Credits: 3+1=4**

**Depth of the Course-**Comprehensive Knowledge of Organisational Behaviour

**Course Objectives:**

1. To describe the major theories, concepts, models and frameworks in the field of Organisational Behaviour.
2. To explain determinants of Organisational Behaviour at Individual, Group and Organisational Level.
3. To give knowledge about approaches to line-up individual, groups & managerial behaviour in order to achieve organisational goals.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction to Organisational Behaviour (OB)	Meaning, Definition, Nature, Scope, Importance, Key Elements of OB, Disciplines that contribute to the OB field, Models of OB, Challenges for OB	<ol style="list-style-type: none"> <li>1. To understand and explain how and why Organisational Behaviour study is important to students.</li> <li>2. To make use of the models of Organisational Behaviour in Specific Organisational Settings.</li> </ol>
2	Individual Determinants of Organisational Behaviour	<p><b>Individual Behaviour-</b> Influencing factors- Personal, Psychological, Organisational System &amp; Resources &amp; Environmental Factors.</p> <p><b>Personality-</b> Meaning, Definition, Key Determinants of Personality, Types of Personality, Theories of Personality</p> <p><b>Value &amp; Attitude-</b> Meaning, Definition and Types.</p> <p><b>Motivation-</b> Meaning, Definition, Importance, Types, Theories- Maslow's Need Hierarchy Theory, McGregor's Theory X &amp; Theory Y, Herzberg's Two- Factor Theory</p> <p><b>Caselets on Personality, Motivation, Value &amp; Attitude</b></p>	<ol style="list-style-type: none"> <li>1. To explain determinants of Organisational Behaviour at Individual Level.</li> <li>2. To make use of the Theories of Personality by adding new perspective for overall development of the Organisation.</li> <li>3. To make students understand how Values and Attitudes play a vital role in the Organisation.</li> <li>4. To make use of Theories of Motivation to motivate employees to achieve higher performance in Organisation.</li> </ol>

3	Group Interaction & Organisational Behaviour	<p><b>Group Dynamics-</b> Meaning, Definition, Types, Reasons for forming Groups, Theories of Group Formation, Stages in Group Development, Group Behaviour, Group Cohesiveness</p> <p><b>Conflict -</b> Meaning, Definition, Traditional &amp; Modern View of Conflict, Organisational Performance &amp; Conflict, Frustration Model, Conflict Management- Competing, Collaborating, Compromising, Avoiding, Accommodating.</p> <p><b>Leadership-</b> Meaning, Definition, Leader V/S Manager, Styles of Leadership</p> <p><b>Caselets on Group Dynamics, Conflict Management &amp; Leadership</b></p>	<ol style="list-style-type: none"> <li>1. To explain determinants of Organisational Behaviour at Group Level.</li> <li>2. To understand the Group Behaviour by learning Theories of Group Formation.</li> <li>3. To enable students to understand the relation between Organisational Performance &amp; Conflict.</li> <li>4. To explicate students, the different styles of Leadership.</li> </ol>
4	Dynamics of Organisation	<p><b>Organisational Culture-</b> Meaning, Definition, Levels, Formation &amp; Sustaining Organisational Culture</p> <p><b>Organisational Change-</b> Meaning, Definition, Types, Forces for Change in Organisation, Resistance to Change, Management of Change</p> <p><b>Caselets on Organisational Culture &amp; Change Management</b></p>	<ol style="list-style-type: none"> <li>1. To explain determinants of Organisational Behaviour at Organisational Level.</li> <li>2. To identify the factors that create and sustain Organisation's Culture.</li> <li>3. To identify and manage the forces that act as stimulants to change.</li> </ol>
5	Project/ Tutorial	<p><b>Students can prepare project on any topic which they have learnt under this subject.</b></p>	<ol style="list-style-type: none"> <li>1. To develop better understanding of theoretical concepts by undergoing the project.</li> </ol>

## Teaching Methodology

Teaching Hours Theory + Tutorials /Project Practical	Innovative methods to be used	Tutorials /Project for 1 credit	Expected Outcome
<b>Unit 1 (10 hrs)</b>	3. Presentations. 4. Group Discussion on Models of OB.	----	3. Describes importance of Organisational Behaviour. 4. Better understanding of Models of Organisational Behaviour.
<b>Unit 2 (14 hrs)</b>	2. Role Play on different types of Personality. 3. Debate/ Group discussion on Motivation (Monetary Motivation v/s Non-Monetary Motivation). 4. Caselets solution sessions and discussion on same.	----	1. Describes determinants of Organisational Behaviour at Individual Level. 2. Develop the knowledge & ability of the students about the concepts of Personality, Motivation, Value & Attitude. 3. Development of Problem-solving and decision making skills of students.
<b>Unit 3 (14 hrs)</b>	4. Role Play on Stages in Group Formation & Group Cohesiveness. 5. Role Play on Conflict Management. 6. Debate/ Group Discussion on Leader v/s Manager. 7. Caselets solution sessions and discussion on same.	----	4. Describes determinants of Organisational Behaviour at Group Level. 5. Develop the knowledge & ability of the students with respect to the concepts of Group Dynamics, Conflict Management & Leadership. 6. Development of Problem solving and decision making skills.
<b>Unit 4 (10 hrs)</b>	5. Role Play on Resistance to Change. 6. Caselets solution sessions and discussion on same.	----	4. Describes determinants of Organisational Behaviour at Organisational Level. 5. Develop the knowledge & ability of the students about the concepts of Organisational Culture & Change. 6. Development of Problem solving and decision making skills.

<b>Exposure</b>	<ol style="list-style-type: none"> <li>1. Preparation of Google Form for Questionnaire of Project, Collection of data and Submission of Project.</li> <li>2. Power Point Presentation.</li> </ol>	Project evaluation of the students on the basis of Project Submission & Presentation of Project	<ol style="list-style-type: none"> <li>1. Better understanding of theoretical concepts, improvement of communication skills, confidence and stage-daring by presenting the project with the help of PPT.</li> </ol>
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### Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
<b>I</b>	<b>1. Role Play, Debate/ Group Discussion Activities.</b>	<b>30</b>	<b>25% MCQ 35% short notes 40% long answers</b>
<b>II</b>	<b>1. Role Play, Debate/ Group Discussion Activities. 2. Caselet Solution &amp; Discussion</b>		
<b>III</b>	<b>1. Role Play, Debate/ Group Discussion Activities. 2. Caselet Solution &amp; Discussion.</b>		
<b>IV</b>	<b>1. Role Play. 2. Caselet Solution &amp; Discussion</b>		
<b>Project</b>	<b>1. Project Submission. 2. Presentation.</b>		
<b>Total –</b>		<b>50</b>	<b>50</b>

### Suggested references:

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Organisational Behaviour: Text, Cases, Games	K. Aswathappa	Himalaya Publishing House	Mumbai
2	Organisational Behaviour	Stephen P. Robbins Timothy A. Judge Neharika Vohra	Pearson Education, Inc	New Delhi
3	Organisational Behaviour	S. S. Khanna	S. Chand & Company Ltd.	New Delhi
4	Organisational Behaviour: Text & Cases	Suja R, Nair	Himalaya Publishing House	Mumbai
5	Organisational Behaviour	Jit S. Chandan	Vikas Publishing House Pvt. Ltd.	New Delhi

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Legal Aspects in Human Resources DSE - C 306 (HRM)**  
**Course Code: DSE - C 306 (HRM)**  
**Credits: 2+2=4**

**Depth of the course- Functional Knowledge**

**Course Objectives:**

1. To study and explain rights of employees at work place.
2. To understand the Applications of different Legal Aspects in HR.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction	Employer, employee, Rights of an employee at work place. <b>HR Policy-</b> Meaning and its importance. <b>Legal issues related to HR in the Organisation</b>	<ol style="list-style-type: none"> <li>1. To study and explain rights of employees at work place.</li> <li>2. To understand the legal issues related to HR in an organisation.</li> </ol>
2	Wage & Salary Administration and The Workmen's Compensation Act, 1923	<b>Wage &amp; Salary Administration-</b> Meaning & Definition of Wage & Salary, Objectives of Wage & Salary Administration, Wage Differentials, Factors affecting Wage & Salary Levels <b>The Workmen's Compensation Act,1923-</b> Introduction,Main Features of the Act, Definitions, Provisions under the Act.	<ol style="list-style-type: none"> <li>1. To understand the basic concepts of Wage &amp; Salary Administration.</li> <li>2. To understand the Applications of The Workmen's Compensation Act, 1923.</li> </ol>
3	The Payment of Gratuity Act,1972 and Sexual Harassment of Women at Workplace (Prevention,	<b>The Payment of Gratuity Act,1972</b> Introduction, Scope and Application, Definitions and Provisions under this Act.	<ol style="list-style-type: none"> <li>1. To gain knowledge &amp; Applications of The Payment of Gratuity Act,1972</li> <li>2. To understand the Applications of Sexual Harassment of Women at</li> </ol>

	Prohibition and Redressal) Act 2013	<b>Sexual Harassment of Women at Workplace (Prevention , Prohibition And Redressal) Act 2013</b> Introduction, Main Features of the Act, Provisions, Vishaka Guidelines	Workplace (Prevention , Prohibition And Redressal) Act 2013
4	Business Exposure in HR		<ol style="list-style-type: none"> <li>1. To introduce the students to the general HR practices in the organisation.</li> <li>2. To enhance the awareness of the students towards different Acts and its application.</li> </ol>

### Teaching Methodology

Teaching Hours Theory + Project	Innovative methods to be used	Project in Legal Aspects 2 Credits	Expected Outcome
<b>Unit 1 (6 hrs)</b>	1. Presentations	<ol style="list-style-type: none"> <li>1. Students are required to visit and collect data from HR department of any small/ medium or large scale industry individually or in groups and study HR policies, Legal issues, calculations of Wage Differentials.</li> <li>2. Students can visit regional gratuity office to understand its functioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Better understanding of the rights of employees at workplace.</li> <li>2. Describes understanding of the legal issues related to HR in organisation.</li> </ol>
<b>Unit 2 (12 hrs)</b>	<ol style="list-style-type: none"> <li>1. Exercise on Wage Differentials</li> <li>2. Caselets solution sessions and discussion on same.</li> <li>3. Group Discussion on The Workmen's Compensation Act,1923</li> </ol>		<ol style="list-style-type: none"> <li>1. Develop the knowledge &amp; ability of the students about the concepts Wage &amp; Salary Administration.</li> <li>2. Better understanding of Workmen's Compensation Act,1923.</li> </ol>



<b>Unit 3 (12 hrs) &amp; Project work</b>	1. Exercise on Calculation of Gratuity. 2. Caselets solution sessions and discussion on same. 3. Role play on Sexual Harassment of Women at Workplace (Prevention , Prohibition And Redressal) Act 2013	<b>3.</b> Students are required to prepare Project on collected data.  Note – Colleges can change the topics for projects as per the requirements of the course.	1. Better understanding of The Payment of Gratuity Act,1972 2. Better understanding of Sexual Harassment of Women at Workplace (Prevention , Prohibition And Redressal) Act 2013
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### Evaluation

<b>Subject</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	-- <b>Project 30 marks &amp; Viva 20 marks</b>	<b>25% MCQ</b>
<b>Unit – II</b>		<b>35% short notes</b>
<b>Unit – III</b>		<b>40% long answers</b>
<b>Project VIVA</b>		<b>(50 marks)</b>
<b>Total –</b>	<b>50 marks</b>	-- <b>50 marks</b>

**Suggested References:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Labour & Industrial Laws	S.N.Mishra	Central law publication	Allahabad
2	Industrial and Labour Laws	S. P. Jain, Simmi Agarwal	Dhanpat Rai & Co. (P) LTD.	New Delhi
3	Sexual Harassment of Women at Workplace (Prevention, Prohibition And Redressal) Act 2013	-	Professional book publishers	Delhi
4	Labour and Industrial laws	H L Kumar	Universal Publication	Delhi
5	Labour and Industrial laws	P.K. Padhi	PHI learning Private Ltd	Delhi

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Discipline Specific Electives (DSE- D- SM)**  
**Fundamentals of Services Management**

**Course Code: D-305 SM**

**Credits: 3+1=4**

**Depth of the Course:** Basics and Overall Perspective of Service Management

**Course Objectives:**

1. To introduce services as a Business Function.
2. To develop practical insights in enhancing business processes of Service sector.
3. To give the students an exposure to a systematic service framework.
4. To enhance service leadership skills.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
I	Understanding Various Aspects of Services	<p><b>Introduction to services:</b> Concept, Scope, Classification &amp; characteristics of services, Service as key differentiator for manufacturing industries. Functions of Service Management. Changing dynamics &amp; challenges of service sector.</p> <p><b>Growth in service sector :-</b> Importance, Growth &amp; Development of service sector in India.</p>	<p><b>Purpose: -</b></p> <ul style="list-style-type: none"> <li>-To understand the basic concept of services.</li> <li>-To highlight upon new revolution in services.</li> <li>-To understand recent trends &amp; new developments in Service Sector.</li> </ul> <p><b>Skills to be developed: -</b>Positive approach towards service sector, Identifying opportunities in services.</p>
II	Service Mix Elements- Introduction	<p><b>Product: -</b> The service products, Service Product Life-Cycle and its Strategies.</p> <p><b>Place: -</b>Managing Distribution Channels in Service Industry, Factors affecting</p>	<p><b>Purpose: -</b></p> <ul style="list-style-type: none"> <li>- To understand various elements of service mix.</li> <li>- To gain practical knowledge of various tools of sales promotion in service sector.</li> <li>- Understanding of difference between products and service sector.</li> </ul>

		<p>choice of channel, Strategies for distribution.</p> <p><b>Promotion:</b> - Objectives, Selection Criteria, Developing the promotion mix, Sales promotion tools.</p> <p><b>Physical Evidence:</b> - Introduction, Elements, Role of physical evidence, Managing physical evidence as a strategy.</p>	<p><b>Skills to be developed:</b> - Professionalism in the area of services.</p>
III	Service Environment	<p><b>Micro &amp; Macro Service Environment:</b> PESTEL Analysis of Service Sector, Six Market Model.</p> <p><b>Market Analysis &amp; Segmentation:</b> - Planning process, Rethinking the customer service function, Focusing &amp; positioning target customers.</p> <p><b>Service Design:-</b> Introduction , Building a service blueprint and its benefits.</p>	<p><b>Purpose:</b> -</p> <ul style="list-style-type: none"> <li>- To learn various models of service market analysis.</li> <li>- To understand the service environment.</li> </ul> <p><b>Skills to be developed:</b> -</p> <ul style="list-style-type: none"> <li>- Developing Analytical ability for proper market analysis.</li> <li>- Innovation &amp; creativity.</li> </ul>
IV	Research in Service Industry	<ul style="list-style-type: none"> <li>- Environmental changes leading to service boom.</li> <li>- Impact of globalisation on service Sector: An Overview</li> <li>- New Economic policy &amp; its impact on service sector.</li> <li>- Preparation of small report based on service market analysis.</li> </ul>	<p><b>Purpose:</b> -</p> <ul style="list-style-type: none"> <li>-Overview of changing dynamics &amp; challenges of service sector.</li> <li>- To gain knowledge of New economic policy &amp; its impact on service sector.</li> </ul> <p><b>Skills to be developed:</b> -</p> <p>Enhancement of service leadership skills through practical learning.</p>

**Teaching Methodology: (Pedagogy for Course Delivery): -**

<b>Teaching Hours</b>	<b>Innovative Methods to be used</b>	<b>Practical for 1 credit</b>	<b>Expected outcome</b>
12	Interactive Sessions followed by feedback, You Tube Videos for better understanding.	Preparing small reports on field visit experience as assigned by subject faculty	Learning will be more practical based on theory, thereby aid students in better understanding.
12	Visits to various service oriented units(organisations) to gain practical knowledge w.r.t service elements and its effective implementation.	Asking students to prepare report on any of the service organisation of their own choice w.r.t Service elements.	Development of interest in service sector and implementation of various concepts in practice.
12	Preparation of PPT and Use of PPT based on field work for service Market analysis by Using different models like PESTEL, Six Market Model etc.	Assigning students with tasks based on current situation and its impact on service sector.	Ability to collect relevant data and its analysis and interpretation.
12	Arranging Sessions of experts from service industry (Guest lecture series)	Maintaining record of every session by the students for evaluation by the teachers	Awareness of actual scenario w.r.t. service operations and its management.

**Evaluation: -Internal (30+20=50) and External – 50 Marks**

<b>Subject : Service Management (305)</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	Various aspects like assignment, presentation, GD etc. as decided by college authorities(30 marks)	<b>25% MCQ</b>  <b>35% Short Notes</b>  <b>40% Long Answers</b>
<b>Unit – II</b>	Class tests , PPT	
<b>Unit – III</b>	Notes preparation	
<b>Unit – IV</b>	Field visit / project report for 20 marks	
4	30+20=50 marks	50 marks

**Suggested References: -**

Sr.No	Title Of the Book	Author/s	Publication	Place
1.	Service Marketing Operations & Management	Vinnie J. Juhari, Kirti Dutta	Oxford University Press	Delhi
2.	Service Marketing Management: An Indian Perspective	Dr. B. Balaji	S. Chand & Co.	Delhi
3.	Service Management: Strategy & Leadership in Service business	Richard Normann	Wiley & Sons,Ltd	NewYork
4.	Service Management: The New Paradigm in Retailing	Jay Kandmpully	Springer	New York

Savitribai Phule Pune University  
SY BBA Semester III (CBCS) Pattern 2019  
Principles & Functions of Services Management- DSE - D-306 SM  
Course code DSE - D-306 SM  
Credits: 2+2=4

**Depth of the Course:** Understanding Core Aspects of Service Management

**Course Objectives:**

1. To recognise & understand different types of service based organizations.
2. To understand the importance of ITES in service sector.
3. To enhance knowledge of global trends in outsourcing.
4. To understand factors crucial to service delivery & recovery.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
<b>I</b>	Understanding Consumer/Customer Behaviour	<p><b>Customer expectation</b>, strategies for managing customer expectation, 4C's of customer service mix.</p> <p><b>-Creating the right service philosophy:</b> - Customer service pre &amp; post transaction elements, Meeting the service challenges.</p> <p><b>-Fundamentals of Customer satisfaction:</b> -Factors influencing customer satisfaction, Understanding the customer services, Customer Loyalty and delight.</p> <p><b>-Managing demand &amp; supply of services:</b> - Managing demand, Patterns &amp; determinants of demand, Strategies of managing demand, waiting line strategies.</p>	<p><b>Purpose -:</b> -</p> <p>-Learning &amp; understanding the concept of customer satisfaction.</p> <p>-Understanding efficient management of demand &amp; supply of services.</p> <p><b>Skills to be developed: -</b></p> <p>-Development of Behavioural Skills.</p> <p>- Management Skills such as facing Risk, challenges, etc.</p>
<b>II</b>	ITES Introduction	<p><b>-Outsourcing:</b> -Meaning of outsourcing, factors driving the need of outsourcing, skills to manage</p>	<p><b>Purpose: -</b></p> <p>- Learning significance of ITES.</p>

		outsourcing, types & stages of outsourcing, global trends in outsourcing & role of India in outsourcing. - <b>KPO/BPO</b> :- Introduction, significance, third party service providers, future of KPO/BPO, challenges faced.	-Understanding the working & challenges faced by KPO/BPO. - Availing opportunities available in outsourcing. <b>Skills to be developed:</b> - -Adaptability to New /Recent trends and Flexibility.
<b>III</b>	Delivering Quality Services and Value Process	-Service based components of quality, perceived quality, Implementing TQM in service sector & its effect. -Service performance failure – concept of service failure & recovery, customer response to service failure & recovery, service recovery following customer complaints, solving problems & preventing recurrence. Creating service value and defining its benefits. - Service Value Chain: Introduction, significance. -Case studies related to service value chain in Banking & Insurance, Hospital & Health Care, Travel & Tourism, Hotel& Catering.	<b>Purpose:</b> - -To understand the importance of quality in service chain. -To learn the concept of service failure & techniques of recovery from it. <b>Skills to be developed:</b> - - Development of service providing abilities and skills. <b>Purpose:</b> - -Learning various service providing sectors through case study. -Understanding key factors for success & failure of service sectors. <b>Skills to be developed:</b> - -Problem Solving Ability, Case study analysis.
<b>IV</b>	Business Exposure in services		<b>To help students understand the core aspects of service management with reference to different service industries.</b>



**Teaching Methodology: -**

<b>Teaching and Project Hours</b>	<b>Innovative Methods to be used</b>	<b>Business Exposure for 2 credits (50 Marks)</b>	<b>Expected outcome</b>
6	Interactive Sessions followed by feedback, You Tube Videos for better understanding.	Visit to Five different Service sector organisations as mentioned in syllabus is mandatory.	Learning will be more practical based on theory, thereby aid students in better understanding.
12	Visits to various service oriented units (organisations) to gain practical knowledge w.r.t service elements and its effective implementation.	Preparing reports by selecting different service sector organisations based on visits in consultation with subject expert.	Development of interest in service sector and implementation of various concepts in practice.
12	Use of PPT Use of Microsoft word and Excel for project preparation	Students are required to prepare consolidated report of all five visits and appear for viva-voce.	Ability to collect relevant data and its analysis and interpretation.
(2 credits)	Arranging Sessions of experts from service industry (Guest lecture series)	Maintaining record of every session by the students for evaluation by the teachers	Awareness of actual scenario w.r.t. service operations and its management.

**Evaluation: - Internal 50 and External 50**

<b>Subject : Service Management (306)</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b> 50 marks Paper
Unit – I	Exposure Report and Viva-Voce (50 marks)	(Based on Theory) <b>25% MCQ or Objective type, 35% short notes ,40% long answers</b>
Unit – II	-Project report 30 marks and Viva 20marks and total 50 marks	
Unit – III		
Unit – IV		
Total = 4 credits	50 Marks	50 Marks

**Suggested References: -**

<b>Sr. No.</b>	<b>Title Of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1.</b>	i) Competitive Advantage	Porter,Michael E.	The Free Press	New York
	ii) Service Marketing and Management	Dr. B. Balaji	S. Chand & Co.	Delhi
	iii) Service Sector Management: An Indian Perspective	C.Bhattacharjee	Google Book library	Online source
<b>2.</b>	i)Management of Service Organisations	SassersR..P.	Allyn and Bacon	Boston
<b>3</b>	ii) Service Marketing	Hellen	W.Macmilan India Ltd.	New Delhi

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Course Title: Agriculture and Indian Economy- DSE - E 305 ABM**  
**Course Code DSE – DSE - E 305 ABM**  
**Credits: 3+1=4**

**Depth of the Course:** Functional Knowledge about Indian Agriculture and rural India

**Course Objectives-**

- 1.To understand importance of agriculture in Indian economy.
- 2.To impart knowledge in the field of agriculture marketing.
- 3.To understand various problems and prospects Indian agriculture.

Unit No.	Unit Title	Contents	Purpose and Skills to be developed
I	Agriculture and economic Development	1.1 Importance and role of Agriculture in Indian economy 1.2 Green revolution 1.3 Interdependence between agriculture and industry. 1.4 Trends in agriculture production and productivity.	For the rural development and industrialization which helps to maximize the production and also essential to economic progress.
II	Agricultural Credit	2.1 Co-Operative credit system; NANBARD 2.2 Role of commercial bank, Self-Help Group- meaning and Impact 2.3 Agriculture Finance 2.4 Agricultural credit: Challenges, Opportunities, Strategies,	To know the functioning of NABARD and micro-credit institutions for augmenting flow of credit to self-employed and rural sector.

III	Agricultural Marketing and Prices	<p>3.1 Agricultural Market, Marketing policy  3.2 Regulated market, Marketing channels  3.3 Behaviour of agricultural prices  3.4 Objectives of agricultural price policy.</p>	<p>To achieve a correct balance between the demand and supply of money.</p> <p>Candidate should know the structure and objectives of regulated market.</p>
IV	Agricultural Growth in India	<p>4.1 Recent trends in agricultural growth in India.  4.2 Inter-regional variations in growth of output and productivity  4.3 Cropping Pattern shifts  4.4 Problems and prospects of Indian agriculture.  4.5 International trade in agricultural commodities.</p>	<p>For the liberalized agro-industries policy with maintain sustained growth in productivity and gainful employment.</p> <p>To know the problems of Indian agriculture to accelerate the future growth and prospectus of economy.</p> <p>To know the issues related to import and exports of agriculture commodities.</p>

## Teaching Methodology-

Teaching Hours Theory +Tutorials/Project Practical	Innovation methods	Tutorials For 1 Credit	Expected outcome
<b>4 credit</b> Unit 1 – 12 hours Unit 2 – 11 hours Unit 3 – 12 hours Unit 4 – 13 hours	<ul style="list-style-type: none"> <li>• Discussion method</li> <li>• Guest lecture method</li> <li>• Workshop/Seminar</li> <li>• Website visits</li> <li>• Preparing Charts on agri development in India and comparison within the state</li> </ul>	Students can collect information on <ul style="list-style-type: none"> <li>• Tutorial on Green Revolution</li> <li>• Study of local agricultural market. And conducting surveys on Difficulties faced by the farmers, supply chain management, shortage and surplus of Farm products</li> <li>• Data Collection on behaviour of agricultural prices</li> </ul>	<ul style="list-style-type: none"> <li>• Concept clarity regarding Agriculture and Indian Economy</li> <li>• Easy understanding of interdependence between industry and agriculture</li> </ul>

## Evaluation

Topics	Internal evaluation 30+20 = 50	External evaluation 50 marks	Suggested add on course
UNIT 1	<ul style="list-style-type: none"> <li>• Assignment</li> <li>• Practical survey of agricultural market</li> <li>• Oral expression of agricultural development in India</li> </ul>	<b>25% MCQ</b> <b>35% short notes</b> <b>40% long answers</b> <b>(50 marks)</b> --	<ul style="list-style-type: none"> <li>• Certificate course on Indian Agricultural Developments</li> <li>• Certificate course on Agricultural Management</li> </ul>
UNIT 2			
UNIT 3			

UNIT 4	<ul style="list-style-type: none"> <li>• Oral presentation by using (charts/Placards/Newspaper cutting/colourful images)</li> <li>• Group presentation on agri based Indian economy</li> </ul>		<ul style="list-style-type: none"> <li>• Agriculture income and Indian economy.</li> </ul>
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**Suggested references:**

Sr.No.	Title of the Book	Author	Publication	Place
1	Agricultural Economics	Bilgrami S.A.	Himalaya Publishing House	Delhi
2	Indian Economy	Dhingra,I.C	Sultan Chand	Delhi
3	Indian Agricultural Development since Independence	Dantwala M.L. et.al	Oxford & IBH	New Delhi
4	Trade Liberalization and Indian Agriculture	Gulati A. and t. Kelly	Oxford University Press	New Delhi
5	Agriculture Price Policy in India	Kahlon A. S. and Tyagi D. S.	Allied Publisher	New Delhi
6	Agricultural growth, Rural poverty and Environmental Degradation in India	Rao C.H.Hanmantha	Oxford University press	New Delhi
7	Banking Reforms and Agricultural Finance in India	Akhtar S.M.andSidhiqi N.A.,	-	-
8	Reserve Bank of India-Hand book of statistics on Indian economy			

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Rural Development: Principles and Practice DSE - E 306 (ABM)**  
**Course Code DSE - E 306 (ABM)**  
**Credits: 2+2=4**

**Depth of the course:** Functional Knowledge about rural development

**Course Objectives:**

1. To develop appropriate attitude and values required of a rural manager.
2. To develop conceptual and exploratory skills to work for rural development

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Basic elements of Rural Development	Meaning of Rural Development, Need for Rural and its importance. Features of Rural Economy. Size and Structure of Rural Economy, Rural versus Urban development, Growth versus Development. Rural Poverty and Rural Income.	<ol style="list-style-type: none"> <li>1. To study and explain various concepts of Rural Development</li> <li>2. To understand sectoral Development of rural India</li> </ol>
2	Rural Development Policies in India	Need for Rural Development Policy, Goals of Rural Development Policy. Characteristics of Growth and equality orientation Program, Poverty and Unemployment eradication programs. Cooperative Sector and Rural Development, Features of Co-operative Sector and advantages and limitations of Co-operative Sector.	<ol style="list-style-type: none"> <li>1. To understand the basic rural developmental policies in India.</li> <li>2. To understand the various programs of rural Development and initiatives taken the Government.</li> </ol>
3	Role of Agriculture and Sustainable development.	Role of Agricultural and Non-Agricultural sector in rural development. Impact of globalization on rural development. Need, Advantages and limitations of globalization	<ol style="list-style-type: none"> <li>1. To develop the insights for equal development and opportunities</li> <li>2. To understand the linkages and dependency on each other.</li> </ol>

		Sustainable development - Various initiatives taken by Government for agriculture and industry linkages, rural and urban linkages, advantages and effects, Challenges and opportunities for linkages. Initiatives for rural sustainable development. Gandhian Model of Rural Development	
4	<b>Business Exposure in Agri Business Management</b>		

### Teaching Methodology

Teaching Hours Theory + Project	Innovative methods to be used	Project for 2 credits Project and Viva for 50 marks	Expected Outcome
<b>Unit 1 (6 hrs)</b>	1. Presentations	<ol style="list-style-type: none"> <li>1. Students are required to visit and collect data on various aspects of rural development.</li> <li>2. Visit to nearby villages and identify problems faced by them.</li> <li>3. Collecting data about various Government initiatives and creating awareness in rural areas.</li> <li>4. This course requires the students to read a number of syllabus related articles, both old and recent.</li> <li>5. Visit and interview an Agri-exporter to understand the opportunities in Agri-business</li> </ol>	<ol style="list-style-type: none"> <li>1. Better understanding to need for rural development.</li> <li>2. Describes need for equal distribution of resources. .</li> </ol>
<b>Unit 2 (12 hrs)</b>	<ol style="list-style-type: none"> <li>1. Exercise on Differentiating aspects</li> <li>2. Discussion on same.</li> <li>3. Group Discussion on Government initiatives.</li> </ol>		<ol style="list-style-type: none"> <li>1. Develop the knowledge &amp; ability of the students about the concept mentioned in the syllabus.</li> </ol>
<b>Unit 3 (12 hrs)</b>	<ol style="list-style-type: none"> <li>1.Charts will be prepared on Global agri development.</li> <li>2.Case lets solution sessions and discussion on same.</li> </ol>		<p style="text-align: center;">Importance of sustainable agriculture and Learning agricultural ecosystem</p>
<b>Business Exposure</b>			<ol style="list-style-type: none"> <li>1. <b>Project outcome</b> Better understanding of theoretical concepts by visit of students in agri- product Industries. Agri-export Houses.</li> </ol>



			2. To expose students while engaging in experiential learning to internalize rural environment institutions and initiatives
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### Evaluation

<b>Subject</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	--	<b>25% MCQ 35% short notes 40% long answers (50 marks)</b>
<b>Unit – II</b>	--	
<b>Unit – III</b>	--	
<b>Project VIVA</b>	<b>Project 30 marks VIVA 20 marks</b>	--
<b>Total –</b>	<b>50 marks</b>	<b>50 marks</b>

**Suggested references:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Agricultural Economics,	.Bilgrami S.A.R.	Himalaya Publishing House, (1996)	Delhi.
<b>2</b>	“Indian Economy”	Dhingra,I.C	sultan chan.	<b>Delhi</b>
<b>3</b>	Agricultural growth, Rural poverty and Environmental Degradation in India	Rao C.H.Hanmantha (1975)	Oxford University press ,	New Delhi
<b>4</b>	Agriculture Price Policy in India ,	Kahlon A. S. and Tyagi D. S.( (1983)	Allied Publisher	New Delhi
<b>5</b>	Trade Liberalization and Indian Agriculture,	Gulati A. and t. Kelly(1999)	Oxford University Press ,	New Delhi
<b>6.</b>	Rural Development: Principles, Policies and Management	Katar Singh	Publication Year: 2009 DOI: <a href="http://dx.doi.org/10.4135/9788132108399">http://dx.doi.org/10.4135/9788132108399</a>	Online Book

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Subject: Entrepreneurship and Small Business Management- GC-401**  
**Course Code – 401**  
**Credits – 3**

**Depth of the Course:** Basic and functional knowledge of entrepreneurship and small business management

**Course Objectives:**

1. To understand the concept and process of Entrepreneurship.
2. To Acquire Entrepreneurial spirit and resourcefulness.
3. To get acquainted with the concept of Small Business Management.
4. To understand the role and contribution of Entrepreneurs and Small Businesses in the growth and development of individual and the nation.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Entrepreneurial Perspective	<ul style="list-style-type: none"> <li>• Concept of Entrepreneur, Manager, Intrapreneur</li> <li>• Entrepreneur and Entrepreneurship</li> <li>• Meaning, Definition, Evolution.</li> <li>• Types of Entrepreneurs, Qualities and Functions of Entrepreneur.</li> <li>• Factors influencing Entrepreneurship: Psychological, Social, Economical and Environmental factors.</li> <li>• Role of Entrepreneur in growth and development of the small business.</li> <li>• Problem of Unemployment and Importance of wealth creation.</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>• Learning &amp; understanding the concept of Entrepreneur and process of Entrepreneurship.</li> <li>• Highlighting the role of entrepreneurs in growth and development.</li> <li>• Understanding importance of Entrepreneurial as career</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>• Inculcating Entrepreneurial skills and abilities.</li> <li>-</li> </ul>

2	Business Opportunity Identification	<ul style="list-style-type: none"> <li>• -Definition of business, industry &amp; commerce and their interrelationship in today’s environment.</li> <li>• Opportunity Search:</li> <li>• Divergent Thinking Mode: Meaning Objectives</li> <li>• Tools and Techniques: Environmental scanning for business opportunity Identification.</li> <li>• Opportunity Selection:</li> <li>• Convergent Thinking Mode: Meaning, Objectives ,Tools And Techniques: Market Survey</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>• Environmental Scanning for identification of Business opportunities.</li> <li>• Learning various tools and techniques of opportunity search and its appropriate selection.</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>• Development of Divergent and Convergent thinking abilities.</li> </ul>
3	Management of MSMEs and Sick Enterprises :	<ul style="list-style-type: none"> <li>• Meaning, Objectives and Functions of MSMEs</li> <li>• Challenges of MSMEs, Preventing Sickness in Enterprises – Specific Management Problems; Industrial Sickness in India – Symptoms, process and Rehabilitation of Sick Units.</li> <li>- Financial Assistance for Small</li> <li>• Enterprise: Institutional:</li> <li>• a)Bank Loan</li> <li>• b) Angel Funding c) Venture Funding</li> <li>• d) Self Employment Schemes of Government of Maharashtra.</li> <li>• e) Government Financial Institutions: Khadi and Village Industries Board (KVIB), Rajiv Gandhi UdyamiMitraYojana (RUGMY)</li> <li>• f) Prime Minister Employment Generation Programme (PMEGP).</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>• To understand the concept of MSME and its challenges.</li> <li>• Creating awareness about financial assistance of various institutions</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>• Learning about fund raising for small businesses.</li> <li>• Knowledge about self-employment schemes.</li> <li>• Development of practical approach towards new businesses.</li> </ul>
4	Study of Women-founded Start-ups in India and Entrepreneurs’ biography	<ul style="list-style-type: none"> <li>• -UpasanaTaku, Anisha Singh, Sabina Chopra.</li> <li>• Azim H. Premji, Ratan Tata, DR. Shiva Nadar.</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>• Understanding key factors for success &amp; failure</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>• Problem Solving Ability</li> <li>• Qualities/Skills can be acquired from these business leaders to become successful.</li> </ul>

**Teaching Methodology (Pedagogy for Course Delivery) :-**

<b>Teaching Hours</b>	<b>Innovative Methods to be used</b>	<b>Expected outcome</b>
<b>Unit 1 -12 Hours</b>	Interactive Sessions followed by feedback, Role Play for various types of entrepreneur.	It enables students to learn the basics of Entrepreneurship and entrepreneurial development which will help them to provide vision for their own Start-up.
<b>Unit 2 -12 Hours</b>	Group Discussion and Brain Storming sessions for generation of innovative ideas. Theory lectures for conceptual understanding.	Development of interest and positive approach towards entrepreneurship and new start ups.
<b>Unit 3 -12 Hours</b>	Use of PPT for better understanding of various financial institutions and Schemes	Ability to collect relevant data and its analysis and interpretation.
<b>Unit 4 -12 Hours</b>	Arranging Sessions of experts from service industry (Guest lecture series), Presentations by students for self-learning.	Understanding key aspects of success and failure of businesses.

**Evaluation :- Internal Marks 30**

<b>Subject :</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	Evaluation of the students on the basis of various criteria of assessment as prescribed by college	70 Marks Final Examination based on pattern of question papers as prescribed by SPPU.
<b>Unit – II</b>		
<b>Unit – III</b>		
<b>Unit – IV</b>		
<b>Total =4</b>	<b>30 Marks</b>	<b>70 Marks</b>

**Suggested References :-**

<b>Sr. No</b>	<b>Title Of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Entrepreneurship Development and Small Business Enterprises	Poornima M. Charantimath	Pearson, 2014.	Delhi
2	Management of Small Scale Industries	Desai Vasant	Himalaya Publishing House	Delhi
3	The Dynamics of Entrepreneurial Development and Management,	Desai Vasant	Himalaya Publishing House, 2015	Delhi

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**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Entrepreneurship and Small Business Management**  
**Course Code - 401**

<b>Q. No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	20 Marks
		Match the Pairs	5	
		Answer in one sentence	5	
		Fill in the blanks	5	
2	Solve any 3 out of 5	Long Answer Question	3*10 Marks	30 Marks
3	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			70 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV (CBCS) Pattern 2019**  
**Course: Production and Operation Management- 402 GC**  
**Course Code -402 GC**  
**Credits - 3**

**Depth of Course:** Reasonable Working knowledge.

**Course Objectives:**

1. To understand the key concepts of Production and Operation Management.
2. To understand the various manufacturing methods and role in managing business.
3. To create awareness about the various safety measures and ergonomics in industries.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction	<ul style="list-style-type: none"> <li>• <b>Introduction to Production and Operation Management</b> – Meaning, Nature, Scope,</li> <li>• Objectives, Importance, Functions of Production and Operation Management,</li> <li>• Variety of business, Methods of manufacturing, Plant layout, Service layout,</li> <li>• Safety considerations and environmental aspects.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the basic concept of Production and Operation Management and various methods of manufacturing.</li> <li>• To understand the different layout and safety considerations used for production management.</li> </ul>
2	Production Design, Planning , Control	<ul style="list-style-type: none"> <li>• <b>Production Design:</b> Meaning, Objectives, product policy, Techniques of product development.</li> <li>• <b>Production Planning</b> - Meaning, Definition, Objectives, Scheduling, Routing, Dispatch, follow up.</li> <li>• <b>Production Control</b> –Meaning, Objectives, Factors affecting production control.</li> <li>• <b>Caselets on design, planning and control.</b></li> </ul>	<ul style="list-style-type: none"> <li>• To make the students understand how product developed, planned and controlled in manufacturing.</li> </ul>

3	Productivity and Ergonomics	<ul style="list-style-type: none"> <li>• <b>Productivity and Quality Control-</b> Meaning, Definition, Importance,</li> <li>• Measurement techniques, Quality control, Quality circles, TQM.</li> <li>• Ergonomics: Definition, Importance, Bio-Mechanical factors, safety equipment and device.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the concept of productivity and quality management.</li> <li>• To provide knowledge to the students regarding Ergonomics and safety measures.</li> </ul>
4	Maintenance Management	<ul style="list-style-type: none"> <li>• Maintenance Management : Introduction , Meaning, Types,</li> <li>• Planning, Scheduling, Techniques.</li> <li>• Modern Scientific maintenance methods ,</li> <li>• Automation and computer integrated manufacturing.</li> </ul>	<ul style="list-style-type: none"> <li>• To make the students aware about Changing Environment, Production and operation maintenance methods.</li> </ul>

### Teaching Methodology

Teaching Hours Theory	Innovative methods to be used	Expected Outcome
<b>Unit 1 - 12 Hours</b>	Interactive teaching methods to be adopted. Role-Play.	<ol style="list-style-type: none"> <li>1. Describe the basic concept of production and operation management.</li> <li>2. Understanding the manufacturing methods and various plant layouts used in industries.</li> </ol>
<b>Unit 2 - 12 Hours</b>	Production Design , Planning and Control Caselets solution sessions and discussion on the same.	<ol style="list-style-type: none"> <li>1. Understanding the importance of product design, production planning and Control.</li> <li>2. Develop the Problem- solving and decision making skills.</li> </ol>
<b>Unit 3 - 12 Hours</b>	Student Presentation. Caselets solution sessions and its discussion.	<ol style="list-style-type: none"> <li>1. To understand the peoples efficiency in their working condition</li> </ol>
<b>Unit 4 - 12 Hours</b>	Student Presentations.	<ol style="list-style-type: none"> <li>1. Understand the Changing Environment, maintenance methods of production and operation .</li> </ol>



## Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
I	2. Role Play.	30	25% MCQ 35% short notes 40% long answers
II	3. Caselet Solution & Discussion		
III	3. Students Presentation. 4. Caselet Solution & Discussion.		
IV	1.Presentation		
<b>Total –</b>		<b>30 Marks</b>	<b>70 Marks</b>

## Suggested References:

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Production and Operation Management	L. C. Jhamb	Everest Publishing House	New Delhi
2	Production and Operation Management	Chase	Irwin Professional Publishing	U. S.
3	Production and Operation Management ( With skill development- caselets and cases)	N.Suresh	Newage International publication	New Delhi
4	Operation Management	B.Mahadevan	Pearson Education India	New Delhi

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Production Operations Management**  
**Course Code - 402**

<b>Q. No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	20 Marks
		Match the Pairs	5	
		Answer in one sentence	5	
		Fill in the blanks	5	
2	Solve any 3 out of 5	Long Answer Question	3*10 Marks	30 Marks
3	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			70 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Course: Decision Making and Risk Management- 403 GC**  
**Course Code – 403 GC**  
**Credits – 3**

**Depth of the Course: Functional Working Knowledge**

**Course Objectives:**

1. To learn the key topics in decision making and risk management so that they can improve decision making and reduce risk in their management activities and organizations.
2. Find the best alternative in a decision with multiple objectives and uncertainty.
3. Describe the process of making a decision.
4. Analyze an organization's decision making system.
5. Develop a risk management process.

<b>Unit No</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose and Skills to be Developed</b>
<b>1</b>	Introduction to Decision making and Risk Management	<ul style="list-style-type: none"><li>• Decision Making and Risk Management – Introduction, Concept, Problem definition and framing.</li><li>• Rational Models of decision making, Other models - Myers Briggs, Bounded Rationality model, Retrospective decision model, OODA Loop Model, Ladder of Inference etc.</li></ul>	<ul style="list-style-type: none"><li>• To understand the role and scope of Decision making and Risk management in organisations.</li></ul>

		<ul style="list-style-type: none"> <li>• Types of Decisions, Steps in Decision making process, Creative decision making process.</li> <li>• Why rational models fail ?, Traps and cognitive barriers that lead to sub-optimal decisions</li> </ul>	
2	Decision making Tools and Models	<ul style="list-style-type: none"> <li>• Decision Making - Groupthink versus the wisdom of crowds, Avoiding decision-making traps.</li> <li>• Intuition: pros and cons, Decisions making for corporate management, execution, and operation of projects, Role of technology in decision making and data analysis.</li> <li>• EQ (Emotional Intelligence) versus IQ as essential decision making traits to manage risks</li> <li>• Dealing with conflict and Risk - Resistance to change, Key elements of EQ: personal and social competencies, Dissonant decision making leadership and brain chemistry</li> <li>• Qualitative and Quantitative risk analysis tools /methods – Introduction, Concept.</li> </ul> <p>Decision Models in strategic management, Decision making systems.</p>	<ul style="list-style-type: none"> <li>• To understand the importance of Decision making tools and models in business.</li> </ul>
3	Role of Decision Making and leadership	<ul style="list-style-type: none"> <li>• Definitions of leadership and followership, Motivational theory; common motives of leaders and followers.</li> <li>• Identifying resources that affect your power and influence; use and misuse of power, Role of competition and conflict in leadership roles.</li> <li>• Charisma, heroes, bullies and jerks – aspects to be considered in decision making and leadership.</li> <li>• Decision making and Leadership - Values as underpinnings of leadership.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the role of leadership and its allied aspects while making decisions.</li> </ul>

4	Organizational Values in Decision Making and Risk Management	<ul style="list-style-type: none"> <li>• Importance of Team composition, Understanding your own value system and how it influences choices, political views, personal and organizational decisions</li> <li>• Organizational values –examples of values for well-known corporations. Importance of shared values in decision making and avoiding risks.</li> <li>• Vision statements as organizing templates for where organizations or individuals are aiming., Examples of individual and corporate vision statements</li> <li>• Developing and communicating your own view of what needs changing or what is possible to avoid risks.</li> <li>• Risk communication, Risk Sharing, Strategic and integral planning of projects,</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the role and importance of organizational values in Decision making and Risk Management</li> </ul>
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### Teaching Methodology

Teaching Hours Theory	Innovative Methods to be used/ AV Applications	Expected Outcome
Unit 1 - 12 Hours	Case Studies/ Videos/ Discussions on various models of Decision making and Risk management.	To understand the role and scope of Decision making and Risk management in organisations.
Unit 2 - 12 Hours	Case Studies/ Videos/ Discussions on Decision making tools and techniques.	To understand the importance of Decision making tools and models in business.
Unit 3 - 12 Hours	Case Studies/ Videos/ Discussions on Leadership tools and techniques.	To understand the role of leadership and its allied aspects while making decisions.

<b>Unit 4 - 12 Hours</b>	Case Studies/ Videos/Discussions on Organizational values and its importance in decision making and risk management.	To understand the role and importance of organizational values in Decision making and Risk Management
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### Suggested References:

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Decision and Risk Analysis for Construction Management	Melvin W. Lifson, Edward F. Shaifer	John Wiley & Sons 1st.	U.S.
<b>2</b>	Credit appraisal, risk analysis and decision making	D.D. Mukherjee,	Snowwhite Publications 9 <sup>th</sup> Edition.	India
<b>3</b>	Managing Project Risk and Uncertainty	Chris Chapman and Stephen Ward,	Wiley Publications.	Newyork
<b>4</b>	Process Systems Risk management	Ian Cameron, Raghu Raman	Elseveir Academics Press	
<b>5</b>	Fundamentals of Risk Measurements	Chris Marrison	Tata McGraw Hill	New Delhi
<b>6</b>	Hand book of Environmental Risk Assessment and Management	Calow P	Blackwell Science Ltd	Oxford, UK

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**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Decision Making and Risk Management**  
**Course Code - 403**

<b>Q. No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b>  Multiple Choice Questions	5	20 Marks
		Match the Pairs	5	
		Answer in one sentence	5	
		Fill in the blanks	5	
2	Solve any 3 out of 5	Long Answer Question	3*10 Marks	30 Marks

3	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			70 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Course: International Business Management- 404 GC**  
**Course Code – 404 GC**  
**Credits – 3**

**Depth of the Course:** Functional Working Knowledge

**Course Objectives:**

1. To acquaint the students with emerging trends and issues in International Business.
2. To study the impact of International Business Environment on foreign market operations.
3. To analyze International trade models.
4. To analyze the International Investment and its risks associated.
5. To understand financial aspects in world economies, their need and functionality

Unit No	Unit Title	Contents	Purpose and Skills to be Developed
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1	Introduction to International Business	<ul style="list-style-type: none"> <li>• Meaning, Nature and Scope of International Business</li> <li>• Globalization – Effects on Economy, Advantages and Challenges</li> <li>• International Trade Theories and its applications – Reasons for international trade Ricardo’s Theory, Hecksher Ohlin Theory, Michael Porter’s Diamond model.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the Role and Scope of International Business.</li> <li>• Understand the concepts and role of International trade theories.</li> </ul>
2	International Business Environment	<ul style="list-style-type: none"> <li>• International Corporations – Meaning, Scope and Nature</li> <li>• Role and Importance of Multi National Corporations in International Business.</li> <li>• Foreign Direct Investment – Meaning, Concept, Importance.</li> <li>• Legal Aspects of FDI from Indian Context.</li> <li>• Cultural and Demographic Environment – Meaning and Importance in International Business</li> </ul>	<ul style="list-style-type: none"> <li>• Role of International Business and its importance at National and International Level.</li> <li>• International Business study in Business Environment.</li> </ul>
3	International Finance	<ul style="list-style-type: none"> <li>• Meaning of Exchange Rate</li> <li>• Determination of exchange rate – Fixed, flexible and managed.</li> <li>• Concept of Spot Rate, Forward rate and Futures</li> <li>• Balance of Trade and Balance of Payments – Introduction, Concept and Importance.</li> <li>• Documentation in International Trade and EXIM Finance.</li> <li>• Financing Techniques and Export Promotion Schemes</li> <li>• World Bank and International Monetary Fund – Objectives and Functions</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding terms of trade in the International Market.</li> <li>• Understanding various Finance and Trade techniques at International level.</li> <li>• Understand the Global Finance Institutions functioning.</li> </ul>
4	International Economic Zones and Foreign Trade	<ul style="list-style-type: none"> <li>• World Trade Organization (WTO) – Evolution and Functions</li> <li>• Regional Trading Agreements, India and Trade Agreements, Regional Integration.</li> <li>• Global Sourcing – Introduction, Concept, Challenges,</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the functions of International Organizations.</li> <li>• Understand the opportunities and risks for India with respect to financial globalization.</li> </ul>

		<p>Advantages ( Indian Context )</p> <ul style="list-style-type: none"> <li>• Composition and Direction of India’s Foreign Trade since 2000.</li> <li>• Case Studies in International Business with reference to Indian Economy on – <ul style="list-style-type: none"> <li>➤ International Marketing</li> <li>➤ International Finance</li> <li>➤ International Human Resource Management</li> <li>➤ International Strategic Management</li> <li>➤ Ethics in International Business</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Understand the world economy and factors affecting it through Case Studies.</li> </ul>
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## Teaching Methodology

Teaching Hours Theory	Innovative Methods to be used/ AV Applications	Expected Outcome
<b>Unit 1 - 12 Hours</b>	Films/Videos of International trade/ Business practices adopted by different countries. Videos on financial ministers of different countries explaining the International trade scenario	To understand the basics of International Business concept and its role.
<b>Unit 2 - 12 Hours</b>	Films/Videos on International Trade theories and its importance. Case Studies on various International trade theories and its impact.	To understand the various International trade theories’ use and experiments on the world trade.
<b>Unit 3 - 12 Hours</b>	Case Studies on International trade and its concept. Case studies on MNC’s and Foreign Direct Investment Policies. Case studies/Videos on the importance of balance of payments and	To understand the International trade concepts and various key concepts affecting the terms of trade.  To understand how a country can gain through International trade practices.

	International money standards concept. Case studies/videos on Cultures and Demographics of different countries.	
<b>Unit 4 - 12 Hours</b>	Case Studies/ Quiz/ Discussion on policies adopted by International trade organizations. Case Study/Debate on Financial globalization and its impact. Films/videos/Case study/ Discussion on the 2008 world crisis/recession. Films/Videos on the India's Foreign Trade Policies. Case studies and discussions on free trade and protection policies. Case studies and discussions on Regional Trade Agreements.	Understand the concept of currency exchange rate in the International market.  To understand the role and contribution of International trade organizations.  Understand the concept of financial globalization and its benefits and adversities. To understand various free trade and protection policies implementation and its role.  Understand the Regional Integration and Regional groups' concept in International trade.

### Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
I	3. Role Play. MCQs ,Presentations	30	25% MCQ 35% short notes 40% long answers
II	4. Caselet Solution & Discussion		
III	5. Students Presentation. 6. Caselet Solution & Discussion.		
IV	1.Presentation		
<b>Total –</b>		<b>30</b>	<b>70</b>

### Suggested References:

Sr. No.	Title of the Book	Author/s	Publication	Place
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1	International Economics –,	Francis Cherunilam	Tata McGrawHill.1999	New Delhi
2	International Economics –	Salvatore D.L.	Prentice Hall. 7th Edn.2001	U. S.
3	International Economics –	Sodersten Bo,	Macmillan Press Ltd.1981	New Delhi
4	International Economics	Dr. D. M. Mithani2000	Macmillan Press Ltd.1981	New Delhi
5	International Economics	M. L. Jhingan	Vrinda Publications, Delhi 2006	New Delhi
6	International Business	K Aswathappa	Tata McGrawHill.1999	New Delhi

**Savitribai Phule Pune University**  
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**University Examination Sub: International Business Management**  
**Course Code - 404**

Q. No.	Compulsory / Choice	Nature of Question	Marks	Total Marks
1	Compulsory Question	Objective Type Questions Multiple Choice Questions	5	20 Marks

		Match the Pairs	5	
		Answer in one sentence	5	
		Fill in the blanks	5	
2	Solve any 3 out of 5	Long Answer Question	3*10 Marks	30 Marks
3	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			70 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV (CBCS) Pattern 2019**  
**Course: Advertising and Promotion Management- DSE- 405 A-MM**  
**Course Code - 405 A-MM**  
**Credits – (3+1)=4**

**Depth of Course:** Reasonable Working knowledge.

**Course Objectives:**

1. To develop knowledge and understanding of importance of advertising.
2. To understand different sales promotion techniques.
3. To know about promotion management.

4. To understand the process of online advertising.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction and Advertising Effectiveness.	<ul style="list-style-type: none"> <li>• Meanings, Definition, Functions, Criticism, Ethics, Social issues.</li> <li>• Strategic advertising decisions -advertising budget, advertising framework planning and organisation.</li> <li>• Advertising agency- Definition, functions, types structure.</li> <li>• Advertising effectiveness – objectives of measuring advertising effectiveness, difficulties and evaluation of advertising effectiveness.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the basic concept of advertising and social issues, ethics.</li> <li>• To understand how to measure the effectiveness of advertising.</li> </ul>
2	Copy and medias decisions	<ul style="list-style-type: none"> <li>• Advertising copy- objectives, elements, types of copy, advertising layouts, components, layout format.</li> <li>• Copy creations, pre-testing methods and measurements.</li> <li>• Media decisions – advertising media, media planning , media research , media selection .</li> </ul>	<ul style="list-style-type: none"> <li>• To provide the knowledge regarding copy creations and media selection.</li> </ul>
3	Promotion Management	<ul style="list-style-type: none"> <li>• Promotion – Meaning, Definition, Objectives, factors affecting promotion, growth, techniques, Media technology used for promotions.</li> <li>• Strategic Promotion – strategic and promotion, cross promotion, surrogate promotion.</li> </ul>	<ul style="list-style-type: none"> <li>• To make the student aware about promotion techniques.</li> </ul>
4	Online advertising	<ul style="list-style-type: none"> <li>• Online advertising – pre-requisites of online advertising, Internet Advertising Today, purpose, types, advantages, social media advertising.</li> </ul>	<ul style="list-style-type: none"> <li>• To cultivate the knowledge regarding online advertising and various types.</li> </ul>

**Teaching Methodology:**

Teaching Hours Theory + Tutorials /Project	Innovative methods to be used	Projects	Teaching Outcome
<b>Unit 1 -10 Hours</b>	Understanding concept of advertising and its effectiveness. Read, Watch and analyse the advertise effectiveness	A report on advertising policies used by any one company.	To learn the effectiveness of advertising on performance and profit.
<b>Unit 2 -14 Hours</b>	Case lets solutions and discussion on the same.	Make a PPT on different modes advertising layouts, components, layout format.	Understanding the copy creations, medias planning and media selection.
<b>Unit 3 - 14 Hours</b>	Students' presentation on sales promotion, techniques, caselets solution, group discussion.	A mini project on types promotion techniques	To understand the effectiveness of promotion.
<b>Unit 4 - 10 Hours</b>	Presentation and display on online advertising .discussion on the same.	Draw a flow chart of online advertising	To understand the advantages of online advertising.
<b>And Tutorial -</b>			

## Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
<b>I</b>	<ul style="list-style-type: none"> <li>• Role Play.</li> </ul>	30	25% MCQ 35% short notes 40% long answers
<b>II</b>	<ul style="list-style-type: none"> <li>• Caselet Solution &amp; Discussion</li> </ul>		
<b>III</b>	<ul style="list-style-type: none"> <li>• Students Presentation.</li> <li>• Caselet Solution &amp; Discussion.</li> </ul>		
<b>IV</b>	<ul style="list-style-type: none"> <li>• Presentation and viva – 20</li> </ul>		

<b>Total –</b>	<b>50 Marks</b>	<b>50 Marks</b>
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**Suggested References:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Marketing management	Philip kotler , kellerjha-	Pearson education	New Delhi
2	Advertising and Promotion	Belch and Belch	Tata MC Graw Hill	New Delhi
3	Advertising Management	<i>Rajeev batra and davidaaker</i>	Pearson education	New Delhi
4	Sales Promotion	M.N.Mishra	Himalaya publishing house	New Delhi
5	Advertising and IMC (principles and practices)	William.D. Wells and sandra, pearson	Pearson education	New Delhi

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Advertising and Promotion Management**  
**Course Code – 405 A**  
**Credit - 4 (3+1)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
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1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			50 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Course: Digital Marketing- DSE 406 A- MM**  
**Course Code – 406 A-MM**  
**Credit –(2+ 2) = 4**

**Depth of the Course:** Reasonable Knowledge and Insights in Digital Marketing.

**Course Objectives:**

1. To provide students with the Knowledge about business advantages of the digital marketing and its importance for marketing success.
2. To help students become In demand professional by being acquainted through various Digital channels & their ways of Integration.
3. To get Basic Knowledge of Google Analytics for measuring effects of Digital Marketing & getting Insights of Future trends that will affect the future development of the digital marketing.

Unit No	Unit Title	Contents	Purpose & Skills to be develop
1.	Introduction to Digital Marketing	<ul style="list-style-type: none"><li>• Concept and meaning of Digital Marketing, Digital Marketing Process</li><li>• Meaning of Visibility, Increasing Visibility, Types of visibility, and Examples of visibility.</li><li>• Concept of Engagement, Visitors Engagement, its importance and examples of engagement.</li><li>• Bringing Targeted Traffic</li><li>• Inbound and outbound marketing</li><li>• Converting Traffic into Leads, Types of Conversion, Understanding Conversion Process</li><li>• Tools of Digital Marketing</li></ul>	<ul style="list-style-type: none"><li>• To understand the role &amp; Importance of Digital Marketing.</li><li>• To learn how Digital Marketing impacts the Sales of an Organization</li><li>• To understand the overall effect of Digital Marketing upon the sales of an Organization.</li><li>• To develop digital strategy to influence consumer behaviour.</li></ul>
2	Digital Marketing Planning and Structure	<ul style="list-style-type: none"><li>• Creating initial digital marketing plan, Target group analysis, Inbound vs Outbound Marketing,</li><li>• Content Marketing, Understanding Traffic, Understanding Leads, Strategic Flow for Marketing Activities.</li><li>• WWW, Domains, Buying a Domain, Website Language &amp; Technology, Core Objective of Website and Flow,</li><li>• One Page Website, Strategic Design of Home Page, Optimization of Web sites, Design of WordPress web, SEO Optimization, Introduction to Web analytics, Web analytics – levels</li></ul>	<ul style="list-style-type: none"><li>• To develop the conceptual insights for Digital Marketing.</li><li>• To develop the right understanding of the situations as they are influenced under Digital Marketing.</li></ul>

3	Social Media Marketing	<ul style="list-style-type: none"> <li>• Introduction of Social Media Marketing, Procedure and Fundamentals of –</li> <li>• Facebook Marketing,</li> <li>• Google AdWords, YouTube Marketing,</li> <li>• Email Marketing - Content Writing</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the role of Facebook, Google Ad words, YouTube and Email in digital marketing.</li> <li>• To understand the importance of Digital Platforms &amp; its impact upon the performance of the organizations in complex &amp; varied environment.</li> </ul>
4	Computer Laboratory Work	<p>Digital marketing (also known as data-driven marketing) is an umbrella term for the marketing of products or services using digital technologies, mainly on the Internet, but also including mobile phones, display advertising, and any other digital medium. (UI and UX)</p> <p>PPC Advertising With Google Ad-words          Create Search Campaigns          Creating Display Campaign          Optimising Display Campaign          Remarketing Google Ad-words          Social Media Marketing like .....</p> <ul style="list-style-type: none"> <li>• Creating Search Engine Campaign Ads</li> <li>• Creating Display Campaign</li> <li>• Optimising Display Campaign</li> <li>• Creating Facebook Advertising Campaign and other social media campaign</li> <li>• Create Remarketing Campaign</li> <li>• PR, Digital Marketing, Event Management, Advertising, Packaging, Product Design, Trade Shows, Sponsorship etc. Usurers Interfere and Usurers Experience</li> <li>• Use of Marketing Communication tools effectively</li> <li>• Prepare the MARCOM strategy</li> </ul>	<ul style="list-style-type: none"> <li>• To have the hands on the designing of website and use of it</li> <li>• To know the optimum use of various social media platforms.</li> </ul>

**Teaching Methodology :**

Teaching Hours Theory + Project	Innovative methods to be used		Expected Outcome
Unit I –10 Hours	Group wise presentation to understand Digital Marketing concept.	Individual Assignments to practice the basic concepts in Digital Marketing.	To have an adequate understanding of Digital Marketing, its scope, objectives, opportunities and its challenges.
Unit II–14 Hours	Case Study based session in which strategies are adopted by organizations.	Inviting Suggestions through an effective strategy to organizations based upon the analysis of the Case Study.	To help students develop an understanding towards Digital Strategy building & its effectiveness.
Unit III–14 Hours	Group discussion amongst the students for developing innovative Digital sales strategy to be followed by organizations in digital era.	Discussion & Analysis of success or failure factors behind the strategies implemented digitally.	To find out alternatives for Dynamic organization to ensure their success in highly competitive sales environment.
Unit IV-10 Hours		Designing digital media campaign using appropriate mix of Facebook, Google Ad words, Youtube and Email.	To use the digital tools effectively for marketing
Computer training Project		Anyone of the above	

### Evaluation :

Subject	Internal Evaluation	External Evaluation	Suggested Add on Course
Unit – I	Practical Examination to be conducted in Computer Lab.Good combination of Oral+ Written Exam + Actual Practical Work can be conducted.	25% MCQ 35% short notes 40% long answers 25% MCQ	Basics & Tools of Digital Marketing.
Unit – II			
Unit – III			Hands on Web site creation, SEO, etc
Unit – IV			

<b>Total –</b>	<b>50 Marks</b>	<b>50 Marks</b>	
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### Suggested References:

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Digital Branding	Daniel Rowles	Kogan Page	New Delhi/Mumbai
<b>2</b>	Digital Marketing	Dave Chaffey	Pearson	Pune/ Mumbai
<b>3</b>	Marketing 4.0	Philip Kotler/Herman Kartajaya	Pearson	Pune/ Mumbai
<b>4</b>	Digital Marketing Strategy	Simon Kingsnorth	Kogan Page	Mumbai
<b>5</b>	Digital Marketing	Dave Chaffey/Fiona Ellis	Pearson	Mumbai
<b>6</b>	Social Media Marketing All-In-One for Dummies,	Jan Zimmerman and Deborah		

### A 406 - Guidelines for Computer Training Courses

**2 credits for project report and evaluation will be for Project and Viva for 50 marks.**

#### Objectives of Computer Enabling Activities:

- To familiarize Computer Applications used in particular department and understanding jargons of that respective field.
- To understand various concepts and steps relating to designing of Computer Technologies and its applications in various fields.

#### Method of Conducting Practical Training.

**Requirement** – High Speed Internet or Wi-Fi , computer and screen. For the specialisation courses, teachers are requested to search and download the free demo modules available on the internet.

- Teachers will run the software through dummy entries and will explain the process to the students.
- Students are expected to learn from online demo modules and its utility in the business or actual life situations.

**Expected Outcome:** This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, data collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.

## **Project Guidelines for Students:**

Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off-line). They will have to prepare requirement sheets of various industries and will analyse computer enabled activities. The students will study various difficulties faced and identify probable solutions for the same.

Digital marketing (also known as data-driven marketing) is an umbrella term for the marketing of products or services using digital technologies, mainly on the Internet, which also includes mobile phones, display advertising, and any other digital medium. (UI and UX)

PPC Advertising With Google Adwords

Create Search Campaigns

Creating Display Campaign

Optimising Display Campaign

Remarketing Google Adwords

Social Media Marketing like .....

- Creating Search Engine Campaign Ads
- Creating Display Campaign
- Optimising Display Campaign
- Creating Facebook Advertising Campaign and other social media campaign
- Create Remarketing Campaign

- PR, Digital Marketing, Event Management, Advertising, Packaging, Product Design, Trade Shows, Sponsorship etc. Usurers Interfere and Usurers Experience
- Use of Marketing Communication tools effectively
- Prepare the MARCOM strategy

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Digital Marketing**  
**Course Code – 406 A**  
**Credit - 4 (2+2)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks

3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Course: Business Taxation- 405- B-FM**  
**Course code 405 –B-FM**  
**Credits: (3+1) = 4**

**Depth of the Course: Understanding Core Aspects of Business Taxation.**

**Course Objectives:**

1. To understand different concepts & definitions under Income Tax Act 1961.
2. To understand the importance of Taxation to the students.
3. To update the students with the latest development in the subject of Taxation.



4. To acquire knowledge about the submission of Income tax returns.
5. To prepare students competent enough to take up to employment in tax planner.
6. To develop ability to calculate taxable income of the person as per Income Tax Act 1961.

<b>Unit No.</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose &amp; Skills to be developed</b>
<b>I</b>	Introduction to Income Tax act 1961.	<ul style="list-style-type: none"> <li>• Income Tax Act -1961 (Meaning, Concepts and Definitions)</li> <li>• History of Income Tax in India, Fundamental concepts and definitions under Income Tax Act 1961,</li> <li>• Canons of Taxation,</li> <li>• Objectives of Income Tax,</li> <li>• Taxation structure in India,</li> <li>• Concept and definitions- Income, Person, Assessee, Assessment year, Previous year, Residential Status of an Assessee. Permanent Account Number (PAN)- Uses &amp; Benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the basic concepts of Income tax act.</li> <li>• To know &amp; study the tax structure of India.</li> <li>• Understanding the historical background of Indian Income tax structure.</li> </ul>
<b>II</b>	Heads of Income and computation of total income as per Income Tax 1961.	<p>Different heads of Income: -</p> <p>a) Income from Salary: Salient features, meaning of salary, allowances and tax Liability- Perquisites and their Valuation Deduction from salary. (Theory and basic practical cases)</p> <p>b) Income from House Property: Basis of Chargeability- Annual Value- Self occupied and let out property- Deductions allowed. (Theory and Basic Practical Cases).</p> <p>c) Profits and Gains of Business and Profession: Definitions, Deductions expressly allowed and disallowed.</p> <p>d) Capital Gains: Chargeability- Meaning and concept of Short term and long term capital gains-permissible deductions (Only Theory).</p>	<ul style="list-style-type: none"> <li>• To understand &amp; study different heads of income under income tax act 1961.</li> <li>• To know various exemptions &amp; deductions under Income tax act 1961.</li> <li>• To know the tax compliances of business &amp; Individual person.</li> </ul>

		e) Income from Other Sources Chargeability- Meaning and concept –Inclusion and deduction.( only Theory).	
<b>III</b>	Computation of Total Taxable Income & Filing of Online ITR.	<ul style="list-style-type: none"> <li>• Meaning and concept, Gross Total Income - deduction u/s-80 and Tax Liability for respective Assessment year.</li> <li>• Form 26 AS- Uses</li> <li>• Various types of ITR,</li> <li>• Procedure to file various online ITRs.</li> <li>• Refund of Tax.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the computation of total taxable income.</li> <li>• To know &amp; understand the procedure of online ITR filing.</li> </ul>
<b>IV</b>	Other important aspects of Income tax act 1961	<ul style="list-style-type: none"> <li>• Tax deducted at source (TDS), (TDS section 192-194)</li> <li>• Tax Collection at Sources (TCS)</li> <li>• Advance payment of Tax,</li> <li>• Methods of payment of Tax, (Theory Only).</li> </ul>	<ul style="list-style-type: none"> <li>• To acquire the knowledge about important concepts of Income tax act 1961, such as TDS, TCS, Advance tax etc.</li> </ul>

**Teaching Methodology: -**

<b>Teaching Hours Theory + Tutorials /Project</b>	<b>Innovative Methods to be used</b>	<b>Practical/tutorials</b>	<b>Expected outcome</b>
<b>Unit 1 -10 Hours</b>	Interactive Sessions followed by feedback, You Tube Videos for better understanding of history of Indian Income tax structure.	Group discussion on tax structure of India can be conducted. Use of PAN & its benefits & applications can be discussed.	Learning will be more practical based on theory, thereby aid students in better understanding.

<b>Unit 2 -14 Hours</b>	Use of e-content to understand different forms of Income under income tax act 1961. Conceptual short videos can be given to the students for better understanding.	Short videos of different heads of income can be created. Practical assignments to be given to students, students may collect comprehensive data regarding all the heads of income, it can be studied in a group.	Development of interest in Indian tax regime. Make students aware about different heads of income to understand Income tax act 1961.
<b>Unit 3 - 14 Hours</b>	Use of Income tax website/portal to show students all types of ITR utilities. Comprehensive list of exemptions U/S 80 can be prepared & be given to students for study.	Students are required to prepare consolidated ITR of all five heads of income. Students can take any assumption based example of having income from all the sources.	Understanding of actual online ITR filing. Making students aware about exemptions u/s 80 of Income tax act 1961.(as per the union budget of every financial year by Government of India).
<b>Unit 4 - 10 Hours</b>	Arranging Sessions of tax experts to understand various important concepts of Income tax act.	To understand various types of TDS & it's sub-sections, it can be divided among the group of students, their PPT presentations can be taken to make everyone understand.	Understanding of various types of TDS (From section 192-194 including its sub-sections). Making students aware about different rate of TDS for different sections under Income tax act 1961.
<b>Tutorial</b>			

**Evaluation: - Internal 50 and External 50**

<b>Subject : Business Tax</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b> 50 marks Paper
<b>Unit – I</b>	Internal Assessment 30 marks and Practical based Viva 20 marks total 50 marks	<b>50% Theory &amp; 50% Practical Problems</b> (Based on Theory & Practical)
<b>Unit – II</b>		
<b>Unit – III</b>		
<b>Unit – IV</b>		
	50 Marks	50 Marks

**Notes: 1. Amendments made prior to commencement of every Academic Year in the above act should be considered.**

**2. Theory questions will carry 50% marks.**

**3. Problems will carry 50 % marks.**

**Suggested References: -**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
<b>1</b>	Taxmann's Students' Guide to Income Tax.	Dr. Vinod K Singhania and Dr. Monica Singhania	Taxmann Publication.	New Delhi.
<b>2</b>	Practical Approach to Income Tax	Girish Ahuja, Ravi Gupta	Wolters Kluwer India Private Limited	New Delhi.
<b>3</b>	Indian Income Tax Act	H.C. Malhotra	Sahitya Bhavan Publication.	Mumbai.
<b>4</b>	Income Tax Laws	V K Singhania,	Taxmann Publication.	New Delhi.
<b>5</b>	Direct Taxes	B. B. Lal, N. Vashisht.	I K International Publishing House Pvt. Ltd.	New Delhi.
<b>6</b>	Students Handbook on Taxation	T N Manoharan & G R Hari	Snow White	--
<b>7</b>	Direct Tax Laws and Practice	Vinod Singhania	Taxmann Publication.	New Delhi.

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Business Taxation**  
**Course Code – 405 B**  
**Credit - 4 (3+1)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
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1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	5 Marks
2	Solve any 1 out of 2	Problem on income for salary with computation of tax liability	1*15 Marks	15 marks
3	Solve any 1 out of 2	Problem on house property with basic adjustment	1*10 Marks	10 Marks
4	Solve any 1 out of 2	Long answer question	1*10 Marks	10 Marks
4	Solve any 2 out of 4	Short Notes	2*5 Marks	10 Marks
	Total			50 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV (CBCS) Pattern 2019**  
**Course: Financial Services. 406 B- FM**  
**Course code: 406 B-FM**  
**Credits: 4 = (2+2)**

**Depth of the Course:** Fundamental knowledge of financial services.

**Course Objectives:**

1. To Study in detail financial services in India.
2. To study & Understand working of Indian financial system.
3. To make the students well acquainted regarding financial markets.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Indian Financial system: an overview	<ul style="list-style-type: none"> <li>• Introduction to Indian Financial System</li> <li>• Structure of Financial system- financial institutions, markets, financial instruments and financial services.</li> <li>• Overview of Indian Financial System</li> <li>• Financial intermediaries in Financial System- Merchant Bankers, underwriters, depositors, Brokers, Sub brokers, bankers.</li> </ul>	<ul style="list-style-type: none"> <li>• To study &amp; understand the basic concepts of Indian Financial system.</li> <li>• To take an overview of Financial structure of the nation.</li> </ul>
2	Fundamental of Financial Markets	<ul style="list-style-type: none"> <li>• Primary Markets: Meaning, functions, Role in Economic Development.</li> <li>• Secondary markets: Meaning, functions, Role in Economic Development.</li> <li>• Issue &amp; Management of IPOs</li> <li>• Role of stock Exchanges in economic development. BSE, NSE, OTCEI- Functions.</li> <li>• Money Market Instruments.</li> <li>• Difference between Money Market &amp; Capital Market.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the functioning of primary &amp; secondary market.</li> <li>• To study the role of stock exchanges in India.</li> </ul>
3	Financial Services in India and Derivatives & Commodity Market	<ul style="list-style-type: none"> <li>• Mutual Funds- Meaning, Types, Advantages and Disadvantages, Factors affecting investment in mutual fund. Mutual fund investment- Selection of best mutual funds.</li> <li>• Factoring- Meaning, types, advantages and disadvantages.</li> </ul>	<ul style="list-style-type: none"> <li>• To Study &amp; examine various financial services provided by various financial institutions in India</li> </ul>

		<ul style="list-style-type: none"> <li>• Venture Capital- meaning, importance, process.</li> <li>• Credit rating Agencies-Importance &amp; Role. Derivatives- Meaning &amp; Definition, Importance.</li> <li>• Future and Options- meaning, types, importance.</li> <li>• basics of Future, Forward, Option contracts, Swaps, Hedging, Swap etc.</li> <li>• Commodities, Multi Commodity Exchange of India Limited (MCX)- Functioning &amp; Importance.</li> <li>• Exchange traded funds- Functioning &amp; Importance.</li> </ul>	<ul style="list-style-type: none"> <li>• Basic knowledge of derivatives &amp; Commodity market.</li> </ul>
4	Computer laboratory work	<ul style="list-style-type: none"> <li>•</li> </ul>	

### Teaching Methodology

Teaching Hours Theory + Tutorials /Project/ Practical	Innovative methods to be used	/Tutorials /Project for 1 credit – (If Applicable)	Expected Outcome
Unit 1- 10 Hours	PPT, Video, Group discussion,	<ul style="list-style-type: none"> <li>• Guest lecture on Indian Financial system</li> <li>• PPT</li> </ul>	Understanding of Financial system of India.
Unit 2- 14 Hours	PPT, Video, Group discussion	<ul style="list-style-type: none"> <li>• Visit to BSE OR NSE</li> <li>• Study of different types of Debt equity listed at stock market</li> <li>• Comparative study of IPO launched in last 5 years</li> </ul>	Understanding of the functioning of Financial markets of India.
Unit 3- 14 Hours	PPT, Video, Group discussion	<ul style="list-style-type: none"> <li>• Different types of Mutual funds introduced in last 5 years</li> <li>• Study of mutual funds on the basis of risk, return and investors preference Opening Demat account and live trading</li> <li>• Virtual trading</li> </ul>	<p>Actual functioning of financial institution of India.</p> <p>Understanding new trends of financial market.</p> <p>Making students aware about derivatives &amp; commodity market.</p>

<b>Unit 4- 10 Hours</b>	PPT, Video, Group discussion	This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, data collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.
<b>Project</b>	Computer training	

### **B-406 - Guidelines for Computer Training Courses**

**2 credits for Project Report and evaluation will be based on Project and Viva for 50 marks.**

#### **Objectives of Computer Enabling Activities:**

- To familiarize Computer Applications used in particular department and understanding jargons of that respective field.
- To understand various concepts and steps relating to designing of computer technologies and its applications in various field.

#### **Method of Conducting Practical Training:**

**Requirement** – High Speed Internet or Wi-Fi , computer and screen.

For the specialisation courses, teachers are requested to search and download the free demo modules available on the internet.

- Teachers will run the software through dummy entries and will explain the process to the students.
- Students are expected to learn from online demo modules and its utility in the business.

**Expected Outcome:** This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, data collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.



### **Project Guidelines for Students:**

Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off-line). They will have to prepare requirement sheets of various industries and will analyse computer enabled activities. The students will study various difficulties faced and identify probable solutions for the same.

### **Tentative projects for Financial Services B 406**

**Practical - Course Details (Students can prepare the project individually or in a group and can (select any) five topics from the list.**

- Computers in Banking and Financial Institutes
- Concept of Core Banking Details , standalone system and new integrated system
- Basics of Banking Software , Web server technology , Standards for Core Banking Software
- General Guidelines for using software, Cloud Security
- Online banking , internet banking UPI payments and Payment gateways , Security aspects for the same.
- Demo on free online banking software by using Projects
- For Example - Collect information **There are three core banking software/systems used by different banks in India;**  
**For Example -**
- Finacle by Infosys.
- BaNCS by TCS.
- Flexcube by Oracle.
- Blockchain . ...

- Artificial Intelligence. ...
- Mobile Banking. ...
- Customer Relationship Management (CRM) ...
- Cyber security.
- IT report of Banking technologies on - **Future of Banking** :Fintech firms and bigtech how the information is captured capturing value chain, providing services such as payments, checking etc.
- **IT in banking sector - Technologies** include Artificial Intelligence (AI), big data, robotic process automation (RPA), The Controller of Certifying Authorities, Institute for Development and Research in Banking Technology (IDRBT)
- Certification Authority (CA) for digital signatures. Process of registration authorities (RA) negotiated dealing system (NDS), the electronic clearing service (ECS) and electronic funds transfer (EFT)
- Customer-to-customer one-click payments, the consumer-to-business effortless digital banking system, password-free biometrics, new crypto currency opportunities, location administrations and offers, and conversational Interface

#### Evaluation

Internal Evaluation	External Evaluation
30 marks for project+ 20 marks viva= 50 marks	25% MCQ , 35% Short Notes , 40% Long Answers

#### Suggested references

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Capital Markets and Financial Services	Srinivasan D.	Everest Publishing House	Delhi
2	The Indian financial System	Vasant Desai	Himalaya	Delhi
3	Financial Markets & Services	Financial Markets & Services	Himalaya	Delhi
4	Financial Services and Markets	Dr.S.Gurusamy	Thomson	Delhi
5	Financial Markets, Institutions, And Financial Services	Clifford Gomez	Online	
6	Financial Institutions & Markets	Bhole	Tata McGraw hill Education Pvt Ltd.	New Delhi.
7	Indian Financial System	M. Y. Khan	Tata McGraw hill Education Pvt Ltd.	New Delhi.

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Financial Services B**  
**Course Code – 406 B**  
**Credit - 4 (2+2)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

**Savitribai Phule Pune University**  
**SY BBA Semester IV (CBCS) Pattern 2019**  
**Course- Human Resource Management Functions& Practices- DSE 405 C- HRM**  
**Course Code: DSE- 405 –C-HRM**  
**Credits: (3+1) = 4**

**Depth of the Course-**Comprehensive Knowledge of Human Resource Management Functions & Practices

**Course Objectives:**

1. To acquire comprehensive Knowledge of Human Resource Management Functions & Practices.
2. To explain the methods of Performance Appraisal, Training, Executive Development and Employee Compensation.
3. To acquire knowledge about various HR practices adopted by the organization.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction to HRM Functions, Performance Appraisal, Training and Executive Development	<ul style="list-style-type: none"> <li>• Introduction to HRM Functions ,</li> <li>• <b>Performance Appraisal:</b> Meaning, Definition, Purpose, Approaches, Process, Methods- Traditional and Modern Methods. Errors. Job Evaluation V/S Performance Appraisal.</li> <li>• Promotion, Demotion, Transfer and Separation.</li> <li>• <b>Training-</b> Meaning, Definition, Purpose, Areas, Importance, Process, Methods; E-Training</li> </ul>	<ul style="list-style-type: none"> <li>• To understand and explain the Concepts of Performance Appraisal, Training and Executive Development.</li> <li>• To make use of Methods Performance Appraisal, Training and Executive Development for overall development of the Organisation.</li> </ul>

		<ul style="list-style-type: none"> <li>• <b>Executive Development</b> - Meaning, Definition, Objectives, Process and methods, E-Development, Difference between Training and Executive Development.</li> </ul>	
2	Employee Compensation and Other Functions of HRM	<ul style="list-style-type: none"> <li>• <b>Employee Compensation</b> :Meaning, Definition, Objectives, Employee Compensation Administration, Determinants of Employee Compensation, Methods, Fringe Benefits.</li> <li>• <b>Other Functions of HRM:</b> Personnel Research, Human Resource Accounting (HRA), Strategic Human Resource Management</li> </ul>	<ol style="list-style-type: none"> <li>5. To understand and explain the Concepts of Employee Compensation and other functions of HRM.</li> <li>6. To make students understand how Employee Compensation and other Functions of HRM play a vital role in the Organisation.</li> </ol>
3	Introduction to HRM Practices, Workers Participation in Management	<ul style="list-style-type: none"> <li>• Introduction to HRM Practices,</li> <li>• <b>Workers Participation in Management:</b> Definitions, objectives, Importance,</li> <li>• Forms,</li> <li>• Workers participation in Management practices in India.</li> </ul>	<ul style="list-style-type: none"> <li>• To develop an understanding about how Workers Participation is an important aspect in an organization and various forms of WPM.</li> </ul>
4	Organisational Development	<ul style="list-style-type: none"> <li>• <b>Organisational Development:</b> Concept and objectives of OD - Organisational development programme, organizational Development process power politics and ethics in OD –</li> <li>• Organizational learning organizational Development Interventions.</li> </ul>	<ul style="list-style-type: none"> <li>• To develop an understanding among the students regarding OD Programme and its interventions.</li> </ul>

### Teaching Methodology

Teaching Hours Theory + Tutorials /Project Practical	Innovative methods to be used	Expected Outcome
<b>Unit 1 -10 Hours</b>	1. Chart preparation and Presentation of Process of Performance Appraisal, Training and Executive Development.	1. Better understanding of Processes of Performance Appraisal, Training and Executive Development through Charts Presentations.

	<ol style="list-style-type: none"> <li>2. Caselets on Performance Appraisal, Training and Executive Development.</li> <li>3. Role plays on Promotion, Demotion, Transfer and Separation.</li> </ol>	2. Development of Problem-solving and decision making skills of students.
<b>Unit 2 -14 Hours</b>	<ol style="list-style-type: none"> <li>1. Project report on Fringe Benefits of anyone organisation.</li> <li>2. Caselets on Employee Compensation and other Functions of HRM.</li> </ol>	<ol style="list-style-type: none"> <li>1. Better understanding of Fringe Benefits and its application in Organisation.</li> <li>2. Development of Problem-solving and decision making skills of students.</li> </ol>
<b>Unit 3 - 14 Hours</b>	<ol style="list-style-type: none"> <li>1. Role-Plays on Workers Participation in Management.</li> <li>2. Caselets on Workers Participation in Management.</li> </ol>	<ol style="list-style-type: none"> <li>1. Better Understanding of importance of WPM.</li> <li>2. Development of Problem-solving and decision making skills of students.</li> </ol>
<b>Unit 4 - 10 Hours</b>	<ol style="list-style-type: none"> <li>1. Group Discussion/ Debate on Organizational Power and Politics.</li> <li>2. Caselets on Organisational Development Programme and Interventions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Creation of awareness about Organizational Power and politics.</li> <li>2. Understanding of Application of OD Interventions.</li> <li>3. Development of Problem-solving and decision making skills of students.</li> </ol>
<b>Tutorial</b>	<b>Students can prepare project on any topic which they have learnt under this subject.</b>	Develop better understanding of theoretical concepts by undergoing the project.

### Evaluation

Unit Number	Internal Evaluation		External Evaluation
	Evaluation of students on the basis of	Marks	
<b>I</b>	<ol style="list-style-type: none"> <li>1. Role Play</li> <li>2. Chart Preparation and Presentation</li> <li>3. Debate</li> <li>4. Group Discussion</li> <li>5. Caselet Solution &amp; Discussion</li> </ol>	30	25% MCQ 35% short notes 40% long answers
<b>II</b>			
<b>III</b>			
<b>IV</b>			
<b>Project</b>			
<b>Total –</b>		<b>50 Marks</b>	<b>50 Marks</b>

**Suggested references:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Human Resource Management	L. M. Prasad	Sultan Chand & Company Ltd.	New Delhi
2	Human Resource Management	K. Ashwathappa	Tata McGraw Hill	New Delhi
3	Personnel Management	C. B. Mamoria	Himalaya Publishing House	Mumbai
4	Personnel & Human Resource Management	A.M. Sharma	Himalaya Publishing House	Mumbai

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Human Resource Management Functions & Practices**  
**Course Code – 405 C**  
**Credit - 4 (3+1)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks



3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			50 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester III (CBCS) Pattern 2019**  
**Course : Employee Recruitment & Record Management DSE- 406 C- HRM**  
**Course Code: DSE-406 C- HRM**  
**Credits: 4 = (2+2)**

**Depth of the course-** Functional Knowledge

**Course Objectives:**

1. To study and explain employee acquisition and its importance in industry.
2. To cultivate right approach towards employee recruitment and record management.

Unit No.	Unit Title	Contents	Purpose & Skills to be Develop
1	Manpower Planning and Forecasting	<ul style="list-style-type: none"> <li>• Manpower planning, Meaning, Definition, Need, Objectives, Levels, Importance,</li> <li>• Process, Techniques of Manpower Forecasting,</li> <li>• Factors influencing estimation of Manpower,</li> <li>• Barriers to Manpower Planning</li> </ul>	<ol style="list-style-type: none"> <li>1. To study and explain Process and Importance of Manpower Planning.</li> <li>2. To understand the Techniques of Manpower Forecasting.</li> </ol>

2	Recruitment and Selection	<ul style="list-style-type: none"> <li>• <b>Recruitment</b> : Meaning, Definition, Need,</li> <li>• Factors Affecting Recruitment, Internal and External Sources of Recruitment and its Advantages and Disadvantages,</li> <li>• Traditional and New Methods of Recruitment- E-Recruitment, Talent Acquisition,</li> <li>• Difference between Recruitment and Talent Acquisition.</li> <li>• <b>Selection:</b> Meaning, Definition, Process, Difference between Recruitment and Selection,</li> </ul>	<ol style="list-style-type: none"> <li>1. To Study and Explain the Sources and Methods of Recruitment.</li> <li>2. To understand detailed Process of Selection in the Organisation.</li> </ol>
3	<b>Employee Record Management</b>	Meaning, Definition, Essentials of a Good Record Principles of Record Keeping, Precautions in Maintaining Records, Importance of Employee records, Types of Employee records.	<ol style="list-style-type: none"> <li>1. To gain knowledge &amp; Applications of Employee Record Management in Organisation.</li> <li>2. To understand the types of Employee Records.</li> </ol>
4	<p>Computer Course (Prescribed Course or Online Course)</p> <p>C-406 HRM Tentative –Computer Enabled Project Topics for C-406</p> <p>Practical - Course Contents (students can perform the project in the group or individual and can opt five topics from the list .</p>	<ul style="list-style-type: none"> <li>• Blockchain integration. ...</li> <li>• People analytics tools. ...</li> <li>• Real-time performance management. ...</li> <li>• Biometric time tracking. ...</li> <li>• Connected platforms in the workplace. ...</li> <li>• Harassment-reporting tools.</li> <li>• HRMS Business Value</li> <li>• HCM cloud application</li> <li>• Employees engagement</li> <li>• Human Resources Cloud Powerhouse emerging technologies, including AI, chatbots, blockchain, and the Internet of Things (IoT).</li> <li>• Data Security and Privacy Controls HRMS to Oracle HCM Cloud, <ul style="list-style-type: none"> <li>• Core Human Resources</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To familiarise Computer applications used in particular department and understanding jargons of the field.</li> <li>• To understand various concepts and steps relating to designing of computer technologies and its applications in various field.</li> </ul>

		<ul style="list-style-type: none"> <li>• Onboarding</li> <li>• Benefits</li> <li>• Absence Management</li> <li>• Workforce Modeling and Predictions</li> <li>• Workforce Directory</li> <li>• HR Help Desk</li> <li>• Work Life Solutions</li> <li>• Advanced HCM Controls</li> </ul>	
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### Teaching Methodology

Teaching Hours Theory + Practical, Computer Lab	Innovative methods to be used	Expected Outcome
<p align="center"><b>Unit 1- 10 Hours</b></p>	<ol style="list-style-type: none"> <li>1. Preparation and Presentation of Chart of Process of Manpower Planning and Techniques of Manpower Forecasting.</li> <li>2. Caselets on Manpower Planning and Forecasting.</li> <li>3. Instead of types of Interviews you can state how to face interviews.</li> <li>4. Case studies signifying application of different trends in HRM</li> </ol>	<ol style="list-style-type: none"> <li>1. Better understanding of the Process of Manpower Planning.</li> <li>2. Describes the understanding of Techniques of Manpower Forecasting.</li> </ol>
<p align="center"><b>Unit 2- 14 Hours</b></p>	<ol style="list-style-type: none"> <li>1. Group Discussion/ Debate on Internal Sources V/S External Sources of Recruitment.</li> <li>2. Project Report on Application Blank Formats and Reference Check Formats of Small scale, Medium Scale and Large Scale Industry.</li> <li>3. Caselets on Recruitment and Selection.</li> <li>4. Newspaper cut outs showing different recruitment adds,</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop the knowledge &amp; ability of the students about Advantages and Disadvantages of Internal Sources External Sources of Recruitment .</li> <li>2. Better understanding of Process of Selection.</li> </ol>

<b>Unit 3- 14 Hours</b>	<ol style="list-style-type: none"> <li>1. Guest Lecture on New Trends in Employee record Management.</li> <li>2. Caselets on Employee Record Management</li> <li>3. Students' participation in workshops, conferences to emphasize on and off the job training.</li> </ol>	<ol style="list-style-type: none"> <li>1. Better understanding of New Trends in Employee record Management.</li> </ol>
<b>Unit 4- 10 Hours</b>	<ul style="list-style-type: none"> <li>• Teachers will run the software through dummy entries and will explain the process to the students.</li> <li>• Students are expected to learn from online demo modules and its utility in the business</li> </ul>	<ol style="list-style-type: none"> <li>1. This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, Data Collection identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.</li> </ol>
<b>Computer Training</b>		

### C 406- Guidelines for Computer Training Courses

**2 credits for project report and evaluation will be for Project and Viva for 50 marks.**

#### **Objectives of Computer Enabling Activities:**

- To familiarize Computer Applications used in particular department and understanding jargons of the respective field.
- To understand various concepts and steps relating to designing of computer technologies and its applications in various field.

#### **Method of Conducting Practical Training:**

**Requirement** – High Speed Internet or Wi-Fi , computer and screen.

For the specialisation courses, teachers are requested to search and download the free demo modules available on the internet.

- Teachers will run the software through dummy entries and will explain the process to the students.
- Students are expected to learn from online demo modules and its utility in the business.

**Expected Outcome:** This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, data collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.

**Project Guidelines for Students:**

Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off- line). The students will have to prepare requirement sheets of various industry and will analyse computer enabled activities. The students will study various difficulties faced and identify probable solutions for the same.

**Evaluation**

<b>Subject</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	Practical Examination to be conducted in Computer Lab.Good combination of Oral+ Written Exam + Actual Practical Work can be conducted.	<b>25% MCQ</b> <b>35% short notes</b> <b>40% long answers</b> <b>(50 marks)</b>
<b>Unit – II</b>		
<b>Unit – III</b>		
<b>Project VIVA</b>		--
<b>Total –</b>	<b>50 marks</b>	<b>50 marks</b>

**Suggested References:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Human Resource Management	L. M. Prasad	Sultan Chand & Company Ltd.	New Delhi
2	Human Resource Management	K. Ashwathappa	Tata McGraw Hill	New Delhi
3	Personnel Management	C. B. Mamoria	Himalaya Publishing House	Mumbai
4	Personnel & Human Resource Management	A.M. Sharma	Himalaya Publishing House	Mumbai
5	Human Resource Management	S. S. Khanka	Sultan Chand & Company Ltd.	New Delhi

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Employee Recruitment & Record Management**  
**Course Code – 406 C**  
**Credit - 4 (2+2)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

**Savitribai Phule Pune University**  
**SY BBA**  
**Semester IV ( CBCS ) Pattern 2019**  
**Subject: Banking and Insurance Management –DSE 405 D-SM**  
**Course Code – 405 D-SM**  
**Credits – (3+1) = 4**

**Depth of the Syllabus: Functional Working Knowledge**

**Course Objectives:**

1. To create the awareness among the students of Indian banking and insurance services offered.
2. To enable students to understand the various services & other developments in the Indian banking and Insurance service sector.
3. To provide students insight into Functions & Role of modern services offered to cater the current needs.
4. To enable students to understand the various digital platforms offered by Banking and Insurance sector to cater the emerging trends.

Unit No	Unit Title	Contents	Purpose and Skills to be Developed
1	Customer Relationship Management in Banking and Insurance Sector	<ul style="list-style-type: none"> <li>• Customer Relationship Management in Indian Banking and Insurance sector- Introduction, objectives, Process, importance.</li> <li>• Customer service in banks; Emerging trends, Role of Marketing officer, Branch to door servicing, Bank marketing to urban – rural areas.</li> <li>• Customer Relationship Management through Call Centres in Banking sector, E- CRM in Banking and Insurance sector, Relationship marketing for creating value in business &amp; market.</li> <li>• Ombudsman Scheme – Scope, types of complaints, mechanism of redressal, major provisions for Banking and Insurance policies.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the Role and concept of CRM services in Banking and Insurance sector.</li> <li>• Understand the role of Ombudsman services offered.</li> </ul>
2	Retail Banking Services	<ul style="list-style-type: none"> <li>• Retail Banking- Introduction, Scope in India, Trends in retailing - New products like Insurance-online / Phone</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the ancillary retail banking services offered and its importance.</li> </ul>



		<p>Banking, Call Centres, Property services, Investment advisory, Cross selling opportunities. Top ups Loans.</p> <ul style="list-style-type: none"> <li>• E banking – Electronic payment system, Types, Digital Token-based EPS, Smart Card EPS, Credit Card EPS, SMS banking.</li> <li>• Opening of Demat accounts, Role of Merchant Bankers, Wealth Management, Portfolio Management services.</li> </ul>	<p>Understand the electronic services offered by banks as an add on service.</p>
3	Universal Banking Services	<ul style="list-style-type: none"> <li>• Universal Banking Services - Concept, Services to Government, Payment &amp; Settlement, Merchant Banking, Mutual Fund, Depository Services, NRI Remittance.</li> <li>• Mobile Banking, App based Banking, Point of transaction (POS) Terminal, Unified Payment Services (UPI), kiosks, ATM's, Digital Signature, M – Wallets, Credit and Debit cards, Aadhar linking.</li> <li>• Online opening of bank accounts – savings &amp; current, and application for credit cards, loan. Applicability of KYC norms in Banking Sector</li> </ul>	<p>Understand the services offered by banks for their products other than traditional banking.</p>
4	Insurance Services and Types	<ul style="list-style-type: none"> <li>• Introduction, emerging trends, Need and Importance, Purpose.</li> <li>• Types – Health, Motor, Travel, Home against loan Insurance, Electronic appliances, Cell phone Insurance, Pandemic Insurance, Cancer Insurance, Contract works Insurance, Education Insurance, Unit based plans, Micro wealth plans.</li> <li>• Pension and Group Schemes, Online KYC, Online policy buying and renewal, Mobile Insurance services, App based services, Collateral Insurance services, Modern payment mechanism services, online claims.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the need of emerging types of Insurance plans and policies.</li> <li>• Understand the online and digital medium of services offered by Insurance companies.</li> </ul>

## Teaching Methodology

<b>Teaching Hours Theory + Tutorials /Project Practical</b>	<b>Innovative Methods to be used/ AV Applications</b>	<b>Project</b>	<b>Expected Outcome</b>
<b>Unit 1 -10 Hours</b>	Films/Videos on CRM policies and services offered on Banking and Insurance sector. Videos/ Discussions on Importance of CRM services.	Listing out various services offered through CRM techniques in the banking and Insurance sector.  List out the functions of Ombudsman.	To understand the role and significance of CRM in Banking and Insurance sector.
<b>Unit 2 -14 Hours</b>	Films/Videos on Importance of ancillary Retail banking and services. Case studies/Discussions on Retail banking services and its growth	List out the significance and evolution and growth of Retail banking and ancillary services offered in financial management.	To understand the functions and significance of Retail banking and its ancillary services.
<b>Unit 3 - 14 Hours</b>	Videos, Case Studies/ Discussions on Universal banking, and mobile banking services.  Analysis of the universal and mobile banking services.	List out the Universal banking policies and services offered.  Evaluate the growth and scope of universal banking services	To understand the concept and various services offered under Universal banking system.
<b>Unit 4 - 10 Hours</b>	Videos, Case Studies/ Discussion on Insurance services offered and its types.  Videos, case studies on digital methods adopted by Insurance sector for offering services.	Identify various Insurance services offered by Insurance companies.  List out various digital platforms rendered to offer services in Insurance sector. Students are expected to visit Minimum 5 banks & insurance organizations covering all business aspects Students shall prepare project report based upon these visits. Viva will be conducted at college level - For 20 marks	To Understand various novel services offered by Insurance companies along with traditional policies  To understand various services of Insurance sector on digital platform.

<b>Tutorial</b>		Anyone of the above	

**Evaluation:**

<b>Subject</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
Unit – I to IV	Internal evaluation for 30 marks MCQ on Banking Concepts MCQs, Short and long answers based on insurance industry, sales implementation concepts. MCQs  Tutorial – presentation for 20 marks	25% MCQ 35% short notes 40% long answers
<b>Total –</b>	<b>50 Marks</b>	<b>50 Marks</b>

**Suggested References: -**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>
<b>1</b>	Retail Banking.	Indian Institute of Banking and Finance,	Macmillan India Ltd (2010/Latest)..
<b>2</b>	Commercial Bank Management	Kanhaiya Singh and VinayDutta.	McGraw Hill
<b>3</b>	Bank management and financial services.	Rose, Peter, and Sylvia Hudgins	The McGraw–Hill,
<b>4</b>	Bank management: text and cases	Hempel, George H., Donald G. Simonson, and Alan B. Coleman,	Taxmann Publication.
<b>5</b>	E-Banking in India: Challenges and Opportunities-	RimpiJatana, R. K. Uppal	-
<b>6</b>	Frontiers of E-Commerce	Ravi Kalakota, Andrew B. Whinston	Pearson Education
<b>7</b>	E-CRM – Concepts and Cases	MadhaviGarikaparthi,	The ICFAI University Press..

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Banking and Insurance Management**  
**Course Code – 405 D**  
**Credit - 4 (3+1)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	Total			50 Marks

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Course: Social Service and NGO Management DSE- 406 D-SM**  
**Course Code – 406 D-SM**  
**Credits – (2+2) = 4**

**Depth of the Course: Functional Working Knowledge**

**Course Objectives:**

1. The course is designed for the students, workers of social sectors and others who wish to develop orientation towards NGOs and their functioning. At the same time, the course is also beneficial for those who wish to attain skills and orientation in Social Work profession.
2. Understand the role and challenges of NGOs in the development concerns of the community
3. Exposure to the success stories of NGO and other organization - International / National / Regional level.

<b>Unit No</b>	<b>Unit Title</b>	<b>Contents</b>	<b>Purpose and Skills to be Developed</b>
<b>1</b>	Introduction to Professional Social Work	<ul style="list-style-type: none"> <li>• Social Work: Definition, objectives, and functions – Historical development of social work in India, Social work education in India.</li> <li>• Contexts of social work practice – Social service, Social welfare, Social reform, Social policy, Social security, Social justice and Social development.</li> <li>• Social Work as a Profession – Qualities of EQ and Ethics in social services ,Philosophy, values, principles and code of ethics of professional social work –</li> <li>• Knowledge and Skills base of social work – Tenets of the social work profession. Registration Process for entering in the social work field.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the Role and Scope of Social Work with various aspects.</li> <li>• Understand the concepts and role Social Work practice.</li> </ul>
<b>2</b>	Social Casework as a method of Social Work –	<ul style="list-style-type: none"> <li>• Concept &amp; Definition – Historical development of Social Casework – Distinctions between needs and wants,</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the role of Social Individual and Group work.</li> </ul>

		<ul style="list-style-type: none"> <li>• Social Individual and Group Work – Objectives, Concept, Historical development of Group Work, Values and Skills, Principles and Purpose.</li> <li>• Tools and Techniques - listening, observation, Interview , home visits, collateral contacts, emotional support, advocacy, role playing, confrontation.</li> <li>• CSR Management – Purpose, Need and Role of Industry.</li> <li>• Fieldwork – Nature and objectives – Importance of field work supervision Professional Associations of social work</li> <li>• Methods of community organization – Awareness creation, Planning and Organizing, Education, Networking, Society Participation, Leadership</li> <li>• Community organization with vulnerable communities – Migrants, Refugees, Slum dwellers and transgender</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the role of CSR and Community management towards Social Work.</li> </ul>
3	Development and Importance of NGOS and Fundraising and Grant Proposals - Institutional Readiness	<ul style="list-style-type: none"> <li>• Concept of Volunteerism, Charity, Welfare and Development, Historical perspective of Volunteerism in India</li> <li>• NGOs: An Introduction and Trends in NGOs in the past 10-40 years, NGO Success stories in India and foreign countries.</li> <li>• Concepts and Functions of NGOs, Challenges in NGO Management, Purpose of Social Welfare Boards, Philanthropy- Concept, Role in NGO and Social Mind-set.</li> <li>• National Policy- 2003 related to NGOs, Legal Aspects of NGOs, Trust Management – Concept, Purpose, legal aspects, Difference between Trusts and NGO.</li> <li>• Importance and Scope of Communication Skills, Interpersonal and Group Communication Defining appropriate marketing tools, Developing a coherent fundraising strategy</li> <li>• Grant Proposals - Identification of budget lines and donor expectations, Structure of grant proposals</li> <li>• Elaboration of a grant proposal, with good examples and exercises</li> <li>• NGOs, coordinating agencies, Funding Agencies and Schemes, International Organizations, National and Regional organizations.</li> <li>• Schemes for NGOs under various ministries of Government of India</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding the role and importance of NGO in society.</li> <li>• Understanding various Functions, objectives and scope and legal aspects of NGO.</li> <li>• .Understand the process of fundraising and grant proposals to the Institutions.</li> <li>• Understand various schemes of NGO and the structure of grant proposals</li> </ul>
4	Computer based laboratory	<ul style="list-style-type: none"> <li>• Please refer end of syllabus</li> </ul>	<ul style="list-style-type: none"> <li>• .</li> </ul>

## Teaching Methodology

Teaching Hours Practical, Computer Lab –	Innovative Methods to be used/ AV Applications	Project	Expected Outcome
Unit 1- 10 Hours	Films/Videos/Case Studies on social work done all over the world.	Listing out various kind of social work undertaken all over the world by many organisations.	Understand the Role and Scope of Social Work with various aspects. Understand the concepts and role Social Work practice.
Unit 2- 14 Hours	Films/Videos/Case Studies on Social Individual Group Work and CSR activities done by corporates.	List out the CSR activities carried out by MNC's all over the world.	Understand the role of Social Individual and Group work. Understand the role of CSR and Community management towards Social Work.
Unit 3- 14 Hours	Case Studies NGO management and its functions and role.	List out various NGO's working actively and their contribution to the society.	Understanding the role and importance of NGO in society Understanding various Functions, objectives and scope and legal aspects of NGO
Unit 4- 10 Hours	Computer based laboratory		
Computer training			

## **D406 - Guidelines for Computer Training Courses**

**2 credits for project report and evaluation will be for Project and Viva for 50 marks.**

### **Objectives of Computer Enabling Activities.**

- To familiarise Computer applications used in particular department and understanding jargons of the field.
- To understand various concepts and steps relating to designing of computer technologies and its applications in various field.

### **Method of conducting practical Training.**

**Requirement** – High Speed internet or Wi-Fi, computer and screen.

For the specialisation course teachers are requested to search and download the free demo modules available on the internet.

- Teachers will run the software through dummy entries and will explain the process to the students.
- Students are expected to learn from online demo modules and its utility in the business

**Expected Outcome:** This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, Data Collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.

### **Project guidelines for students.**

Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off line). They will have to prepare requirements sheet of various industry and will analyse computer enabled activities. They will study various difficulties faced and identify probable solutions for the same.

### **D 406 Social Service and NGO management (Services Management)**



Tentative –Computer Enabled Project Topics D 406

**Practical - course contents (students can perform the project in the group or individual and can ant five topics from the list .**

Customer relationship - Delight & retain your customers by integrating real-time chat inside your website or mobile apps to provide instant & convenient support to your valuable customers.

Customer Management -Manage all your customer details at a single place with our flexible CRM solution. Build long term relationships with customers by using their order history details in the most effective way.

Business Analytics -Know numbers that matter the most to your business - repeat customers, most ordered items & revenues. Understand your customers' behaviour & target them with your new offerings.

- Creating Search Engine Campaign Ads
- Creating Display Campaign
- Optimising Display Campaign
- Creating Facebook Advertising Campaign and other social media campaign
- Create Remarketing Campaign
- PR, Digital Marketing, Event Management, Advertising, Packaging, Product Design, Trade Shows, Sponsorship etc. Usurers Interfere and Usurers Experience
- Use of Marketing Communication tools effectively
- Prepare the MARCOM strategy

**Recommended Books:**

<b>Sr. No.</b>	<b>Title of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	Introduction to social work.	Chowdhry, Paul.	Atma Ram and Sons	New Delhi
2	International social work	Cox, David and Manohar Pawar	Vistar Publications.	New Delhi
3	Towards a philosophy of Social Work in India	Dasguta, S.	Popular Book Services	Mumbai
4	Concepts and methods of social work.	Gore, M. S	Prentice hall of India	Mumbai
5	Social work and social work education	Hepworth, Dean H.	Asia Publication House	Bombay

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Social Service and NGO Management**  
**Course Code – 406 D**  
**Credit - 4 (2+2)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

**Savitribai Phule Pune University**  
**SY BBA Semester IV ( CBCS ) Pattern 2019**  
**Course : Rural Marketing : Concepts and Practices- DSE-405 E- ABM**  
**Course Code – 405 E-ABM**  
**Credits – (3+1) = 4**

**Depth of the Course:** Conceptual understanding on the Rural Marketing with special reference to Indian context and develop skills required to planning of Rural Products.

**Course Objectives:**

1. To develop better understanding of the Indian Rural Economy.
2. Identification of challenges and opportunities in Rural Marketing.
3. To provide exposure to the Rural Marketing Environment and Rural Market.
4. To understand the applications of marketing to Rural Marketing.
5. To understand the application of the Rural Marketing Mix (4 A's) and (4 P's).

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Introduction to Rural Marketing	<ul style="list-style-type: none"> <li>• Concept, Scope, Nature, and Evolution of Rural Marketing in India.</li> <li>• Factors affecting rural marketing: Socio-cultural, economic, and other environmental factors.</li> <li>• Rural Marketing Strategies: 4 P's and 4 A's., -Challenges and Future of Rural Marketing.</li> <li>• Indian Rural Market: Rural Vs Urban Market.</li> <li>• Rural Infrastructure: Connectivity, Electricity, Communication, Healthcare, Education.</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>-Developing better understanding of Indian rural Economy</li> <li>-Better understanding of Rural Marketing Challenges and Opportunities in India.</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>-Analytical abilities : SWOT, SWAC Analysis etc.</li> </ul>

2	Consumer Behaviour and Rural Marketing	<ul style="list-style-type: none"> <li>• Characteristics of Buying Behaviour :</li> <li>• Awareness, Understanding, Consumer Purchase Decision, Salesmen influence.</li> <li>• Problems of Rural Consumer :</li> <li>• Adulteration, Short Weight and Measures, Behavioural Aspects: lack of awareness due to illiteracy(unfair Warranties and Guaranties).</li> <li>• Distribution Models in Rural Markets :</li> <li>• FMCGs, Durables, Agri-inputs. Haats, Vans.</li> <li>• PDS, Cooperative Societies, NGOs.</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>- Understanding of various characteristics of Rural Consumer Behaviour.</li> <li>- Creating awareness about difference between Urban and Rural Consumer Behaviour.</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>-Development of Divergent and Convergent thinking abilities w.r.t. Rural Marketing and in general.</li> </ul>
3	Agricultural Marketing And Role of Indian Government :	<ul style="list-style-type: none"> <li>• Agricultural Marketing :</li> <li>• Importance, Prospects and Issues.</li> <li>• Role of Cooperative and Self Help Groups(SHG) in Rural Marketing.</li> <li>• Commodity Board:</li> <li>• Role and Contribution of Commodity Board in revenue generation and employment in rural India.</li> <li>• Agricultural Export :Role of (APEDA)</li> <li>• Contribution of Agricultural Export in generating revenue for India: Food Grains, Organic Products, Fruit Export.</li> <li>• Government and Rural India :</li> <li>• NREGA, Jan DhanYojana, Aysuhman Scheme, Skill Development.</li> <li>• Microfinance and Credit Services</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>-Identification of Rural Marketing Opportunities.</li> <li>- Understanding Potential of Rural Marketing.</li> <li>- Awareness of various Government schemes and Financial Assistance</li> </ul> <p><b>Skills to be developed :-</b></p> <ul style="list-style-type: none"> <li>- knowledge about self-employment</li> <li>-En-cashing the opportunities offered by the fund raising of Govt.</li> </ul>
4	Recent Trends in Rural Marketing	<ul style="list-style-type: none"> <li>• E- Commerce: Importance and Impact of E- Marketing on rural consumers, Concept of Digital Village, Role of Social Media in rural marketing.</li> <li>• Online Marketers: Role of online Marketers, Growth and Challenges.</li> </ul>	<p><b>Purpose :-</b></p> <ul style="list-style-type: none"> <li>-Highlighting recent trends in rural marketing.</li> </ul> <p><b>Skills to be developed :-</b></p>

			Knowledge of recent trends in rural Marketing
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**Teaching Methodology (Pedagogy for Course Delivery) :-**

<b>Teaching Hours</b>	<b>Innovative Methods to be used</b>	<b>Expected outcome</b>
<b>Unit I-10 Hours</b>	Interactive Sessions followed by feedback, Practical Assignments.	It enables students to learn the basics of Rural Marketing which will help them to provide vision for new businesses in rural market
<b>Unit II-14 Hours</b>	Group Discussion on opportunities in Rural Marketing, Theory lectures for conceptual understanding, Primary Research on Rural Consumer Behaviour.	Development of interest and positive approach towards Rural Marketing.
<b>Unit III-14 Hours</b>	Use of PPT for better understanding of various financial assistance and Government Schemes.	Ability to collect relevant data and its analysis and interpretation.
<b>Unit IV- 10 Hours</b>	Arranging Sessions of Experts from Rural Marketing and Presentations by students for self-learning.	Practical understanding of recent trends in Rural Marketing
<b>Tutorial</b>	Anyone of the above	

**Evaluation: Internal Marks 50**

<b>Subject</b>	<b>Internal Evaluation</b>	<b>External Evaluation</b>
<b>Unit – I</b>	Evaluation of the students on the basis of various criteria of assessment as prescribed by college and guidelines provided by SPPU.	25% MCQ 35% short notes 40% long answers
<b>Unit – II</b>		
<b>Unit – III</b>		
<b>Unit – IV</b>		
<b>Total =4</b>	<b>50 Marks</b>	<b>50 Marks</b>

**Suggested References:-**

<b>Sr.No</b>	<b>Title Of the Book</b>	<b>Author/s</b>	<b>Publication</b>	<b>Place</b>
1	The Rural Marketing	PradeepKashyap	Pearson, (Latest)	New Delhi
2	Rural Marketing in India	K.S.Habeeb-Ur-Rahman	Himalaya Publishing House	New Delhi
3	Indian Agricultural Since Independence	M.L.Dantwala	Oxford & IBH Publishing Co. Pvt. Ltd.	-
4	Rural Marketing : Concepts & Practices	BalramDogra, KarminderGhuman	McGraw Hills	New Delhi

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Rural Marketing : Concepts And Practices**  
**Course Code – 405 E**  
**Credit - 4 (3+1)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

**Savitribai Phule Pune University**  
**SY BBA Semester IV (CBCS) Pattern 2019**  
**Course: Banking Operations and Finance-DSE- E406-ABM**  
**Course Code 406 E-ABM**  
**Credits (2+2) =4**

**Depth of the Course:** Reasonable Knowledge about available financial assistance for agriculture sector and rewards and risk associated with it.

**Course Objectives:**

1. To provide the management students with the knowledge of banking and finance in the area of agriculture.
2. To enable students to know various sources to avail agriculture finance.
3. To study computation of risk as well as rewards with respect to agriculture finance.

Unit No.	Unit Title	Contents	Purpose & Skills to be develop
1	Introduction to Agricultural Banking Operations and Finance	<ul style="list-style-type: none"> <li>• Meaning of banking operations and finance</li> <li>• Need, importance and scope of agriculture finance</li> <li>• Various available types of available agriculture finance</li> <li>• Classification of types of finance for agri business</li> <li>• Scope of banking operations and finance in India for modern agriculture and related business</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the basic concept of agriculture finance.</li> <li>• To understand the financial operations with respect to agriculture finance.</li> <li>• To study the importance and use of agriculture finance.</li> </ul>
2	Sources of Agriculture Finance	<ol style="list-style-type: none"> <li>3. Various types of finance available for agriculture and its related business</li> <li>4. Traditional and modern sources of finance</li> <li>5. Money lenders and Zamindars</li> <li>6. Institutional credit agencies like NABARD, Government co-operative societies, Commercial banks, Primary agriculture societies, Primary and Central land development banks, Kisan Credit Card</li> </ol>	<ul style="list-style-type: none"> <li>• To understand the various traditional and modern means of finance available for agriculture sector.</li> <li>• To study the benefits and drawbacks if any of various sources of agriculture finance.</li> <li>• To understand the operations with respect to availing finance from</li> </ul>



			various financial institutions for agriculture.
3.	Computation of Risk and Rewards with respect to Agriculture finance	<ul style="list-style-type: none"> <li>• Time value of money</li> <li>• Cost of capital</li> <li>• Capital budgeting decisions like NPV, ARR, IRR. Payback period, Cost of capital and Weighted average cost of capital</li> <li>1. Whether to take or not decision</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the various associated risk prevailing with agriculture finance.</li> <li>• To compute various financial risk using various modern tools of risk assessment.</li> <li>• To find out the real time value of returns or loss with respect to agriculture finance.</li> </ul>
4	Computer Laboratory Work	<ul style="list-style-type: none"> <li>• Introduction to IFFCO KisanApp, Agri Media Video App, KisanYojana, Mera mobile app, Crop Insurance Mobile App by Digital India</li> <li>• Online study of PM Fasal Bima Yojana,</li> <li>• Introduction to Agri-Fintech startup farMart</li> <li>• All Agriculture Technology</li> <li>• Introduction to IFFCO KisanApp, Agri Media Video App, KisanYojana, Mera mobile app, Crop Insurance Mobile App by Digital India.</li> <li>• Online study of PM FasalBimaYojana.</li> <li>• Introduction to Agri-Fintech start-up far Mart.</li> </ul>	<ul style="list-style-type: none"> <li>• To give practical knowledge about the use of technology and applications used for agricultural banking and finance.</li> </ul>

## **E 406 - Guidelines for Computer Training Courses**

**2 credits for project report and evaluation will be for Project and Viva for 50 marks.**

### **Objectives of Computer Enabling Activities:**

- To familiarize Computer Applications used in particular department and understanding jargons of the respective field.
- To understand various concepts and steps relating to designing of computer technologies and its applications in various field.

### **Method of Conducting Practical Training:**

**Requirement** – High Speed Internet or Wi-Fi , computer and screen. For the specialisation courses, teachers are requested to search and download the free demo modules available on the internet.

- Teachers will run the software through dummy entries and will explain the process to the students.
- Students are expected to learn from online demo modules and its utility in the business.

**Expected Outcome:** This will help the students to understand how the computers are used in business for collection of information, generating source of information, post entries, various information required to take decisions, data collection , identification of particular source of information and how the information is further processed. Reports are generated based on the filled data.

### **Project Guidelines for Students:**

Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off- line). The students will have to prepare requirement sheets of various industry and will analyse computer enabled activities. The students will study various difficulties faced and identify probable solutions for the same.

## Teaching Methodology

Teaching Hours Theory + Tutorials /Project Practical	Innovative methods to be used	Expected Outcome
<b>Unit 1-10 Hours</b>	1. Interactive teaching methods to be adopted. 2. Practically the importance of finance for agriculture sector should be explained to the students 3. Students belonging to agriculture background are to be requested to share their knowledge with respect to agriculture finance and its banking related experiences	<ul style="list-style-type: none"> <li>• To understand the use of making available finance for agriculture sector in the most profitable manner.</li> <li>• To create interest among the students to take benefits of available finance for agriculture sector.</li> </ul>
<b>Unit 2 -14 Hours</b>	1. Provide project work with respect to various operations of financial institutions in the area of agriculture 2. Government facilities like subsidies, low or no interest loans etc. to be explained through presentation. 3. Visits to various agricultural finance institutions can be planned for better understanding of the topic.	<ul style="list-style-type: none"> <li>• To understand the changing scenario of agriculture finance.</li> <li>• To understand the eligibility and procedure to avail agriculture finance from various financial institutions dealing with it.</li> <li>• To understand the best source of available finance to be availed amongst the various available sources.</li> </ul>
<b>Unit 3 -14 Hours</b>	1. To give live examples of agriculture finance through the source of internet or other available sources. 2. Experts from agricultural finance can be invited for talk with students.	<ul style="list-style-type: none"> <li>• To understand the various calculations which are necessary at or before the time of availing finance.</li> <li>• Development of problem-solving and decision-making skills.</li> <li>• Comparative analysis of various available sources of finance from different sources and find out the best available options amongst them.</li> <li>• To understand the risk and rewards associated with the finance to be availed.</li> </ul>
<b>Unit 4 – 10 Hours</b>	<ul style="list-style-type: none"> <li>• Students can search information after learning through demo. Students will prepare project report based on data collected (Online or off line). They will have to prepare requirements sheet of various industry and will analyse computer enabled activities. They will study various</li> </ul>	<ul style="list-style-type: none"> <li>• To familiarise Computer applications used in particular department and understanding jargons of the field.</li> </ul>

	difficulties faced and identify probable solutions for the same.	<ul style="list-style-type: none"> <li>To understand various concepts and steps relating to designing of computer technologies and its applications in various field.</li> </ul>
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### Evaluation

Unit Number	Project and Practical	External Evaluation
4	Practical and project work on the basis of Computer Course assigned to students and guidelines received from SPPU.	25% MCQ 35% short notes 40% long answers
<b>Total –</b>		<b>50 Marks</b>
		<b>50 Marks</b>

### Suggested References:

Sr. No.	Title of the Book	Author/s	Publication	Place
1	Agricultural Finance and Management	Reddy S S	Oxford and IBH Publication	Delhi
2	Introduction to Agricultural Economics	Pearson John B	Pearson India	Delhi
3	Agricultural Finance and Management	Singh and Sharma	Friends Publication	Merrut
4	Kisan Credit Card Scheme: Impact, Weakness and Further Reforms	Sharma Anil	National Council of Applied Economics Research	New Delhi

**Savitribai Phule Pune University**  
**Question paper Pattern 2019 for SY BBA**  
**University Examination Sub: Banking Operations and Finance**  
**Course Code – 406 E**  
**Credit - 4 (2+2)**

<b>Q.No.</b>	<b>Compulsory / Choice</b>	<b>Nature of Question</b>	<b>Marks</b>	<b>Total Marks</b>
1	Compulsory Question	<b>Objective Type Questions</b> Multiple Choice Questions	5	10 Marks
		Match the Pairs	5	
2	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
3	Solve any 1 out of 2	Long Answer Question	1*10 Marks	10 Marks
4	Solve any 4 out of 6	Short Notes	4*5 Marks	20 Marks
	<b>Total</b>			<b>50 Marks</b>

### **Acknowledgement**

The Syllabus Restructuring of BBA Programme (CBCS-2019 Pattern) is a manifestation of excellence in the field of Management. Savitribai Phule Pune University's focus has always been in raising the academic standards and excellence in the field of education.

The BBA Programme predominantly endeavours for holistic development of students. It has emphasized on cultivating various skills and has also desired business acumen amongst the students.

This revision has been possible only with the help and support of different eminent personalities. The contribution of all the members as a team has enabled the robust revision of all the titles of the Programme. This synergy of the contributors is very crucial in fine tuning of the BBA Programme in its present form.

SPPU is grateful to Hon. Vice Chancellor Dr. Nitin Karmalkar, Hon. Dr. N. S. Umarani, Pro-Vice Chancellor, who has always lent continuous support and encouraged everyone involved in this task of restructuring.

SPPU is also grateful to Hon. Dr. Parag Kalkar, Dean, Faculty of Commerce and Management and Dr. Yashodhan Mithare, Associate Dean, Faculty of Commerce and Management. They have been an inspiration for all the members to complete the work.

Dr. Tanuja Devi, on behalf of SPPU, headed the BBA Restructuring Committee. The experienced members of the Syllabus Restructuring Committee, Dr. Goje – BOS Chairman has contributed through technological blended part in the course content. Dr. Vishwas Iresh Swami, Dr. Prashant Kalshetti, Mr. Prashant Bankar, and Dr. Satish Jagtap, have enabled the revision in a smooth manner. The team is thankful to Dr. Snehal Gaur for her assistance to all the members in framing the syllabus. Dr. Sharmila Kavediya, Dr. Ganesh Patare, and Shri. Sumeet Gaikwad also gave inputs to the curriculum.

**F. Y. B. A Compulsory English**  
**(w. e. f. 2019-2020)**  
**(Choice Based Credit System)**  
**70:30-Pattern**  
**(70-Semester-End Exam & 30-Internal Evaluation)**

**Prescribed Text: *Literary Gleam: An Anthology of Prose and Poetry* (Board of Editors-Orient BlackSwan)**

**Objectives:**

- a) To expose students to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English
- b) To instill human values and develop the character of students as responsible citizens of the world
- c) To develop the ability to appreciate ideas and think critically
- d) To enhance employability of the students by developing their linguistic competence and communicative skills
- e) To revise and reinforce structures already learnt in the previous stages of learning.

**Semester-I**

**Prose:**

1. Engine Trouble — R. K. Narayan
2. On Saying 'Please' — A. G. Gardiner
3. The Gift of the Magi — O. Henry

**Poetry:**

1. A Red, Red Rose — Robert Burns
2. Leave this Chanting and Singing — Rabindranath Tagore
3. The Felling of a Banyan Tree — Dilip Chitre

**Grammar:**

1. Articles
2. Prepositions
3. Verbs  
Regular and Irregular Verbs  
Auxiliary Verbs: Primary and Modal
4. Punctuation

**Communication Skills:**

1. Greeting and Taking Leave

2. Introducing Yourself
3. Introducing People to One Another
4. Making Requests and Asking for Directions
5. Making and Accepting Apology

## **Semester- II**

### **Prose:**

1. In Sahyadri Hills, A Lesson in Humility — Sudha Murthy
2. The Model Millionaire — Oscar Wilde
3. The Eyes are not Here — Ruskin Bond

### **Poetry:**

1. My Heart Leaps Up — William Wordsworth
2. Ozymandias — P. B. Shelley
3. Success is Counted Sweetest — Emily Dickinson

### **Grammar:**

1. Tenses
2. Subject–Verb Agreement
3. Vocabulary

### **Communication Skills**

1. Inviting and Accepting/Declining Invitations
2. Making a Complaint
3. Congratulating, Expressing Sympathy and Offering Condolences
4. Making Suggestions, Offering Advice and Persuading

- Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours, so this course shall have 45 teaching hours. In addition to that there shall be three hours allotted to internal evaluation. Changes as per the university guidelines shall be communicated from time to time.



**F. Y. B. A- Optional English (General Paper-1)**  
**(w. e. f. 2019-2020)**  
**(Choice Based Credit System)**  
**70:30-Pattern**  
**(70-Semester-End Exam & 30-Internal Evaluation)**

**Prescribed Text: *Initiations: Minor Literary Forms & Basics of Phonology* (Board of Editors- Orient BlackSwan)**

**Objectives:**

- a) To expose students to the basics of literature and language and develop an integrated view about language and literature in them
- b) To acquaint them with minor forms of literature in English and help them to appreciate the creative use of language in literature
- c) To introduce them to the basics of phonology of English so that they can pronounce better and speak English correctly.
- d) To prepare students to go for detailed study and understanding of literature and language
- e) To enhance the job potential of students by improving their language skills

**Semester - I**

**Prose Pieces:**

1. A Lesson My Father Taught Me - A.P.J. Abdul Kalam
2. Toasted English - R. K. Narayan

**Short Stories:**

1. The Romance of a Busy Broker - O. Henry
2. The Open Window - Saki

**Poetry:**

1. Sonnet 29: 'When in disgrace with Fortune and men's eyes' - William Shakespeare
2. The World is too much with Us - William Wordsworth
3. The Listeners - Walter de la Mare
4. No Men are Foreign - James Kirkup

**Language Studies:****Introduction to the Sounds of English: Part - I**

(Discrepancy between English Spelling and Pronunciation, Phonetic Symbols and Transcription, The Concept of Phoneme and Minimal Pairs.)

**Semester - II****Short Stories:**

1. The Doll's House - Katherine Mansfield
2. The Thief - Ruskin Bond

**Poetry:**

1. I remember; I remember - Thomas Hood
2. Where the Mind is without Fear - Rabindranath Tagore
3. The Mountain and the Squirrel - R. W. Emerson
4. Up - Hill - Christina Rossetti

**One Act Plays:**

1. The Monkey's Paw - W.W. Jacobs
2. Swansong - Anton Chekhov

**Language Studies:****Introduction to the Sounds of English: Part - II**

(The Concept of Syllable, Monosyllabic and polysyllabic Words, The Concept of Word Stress and Different Standards of Pronunciation i.e. British Received Pronunciation, General American English and General Indian English.)

- Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours, so this course shall have 45 teaching hours. In addition to that there shall be three hours allotted to internal evaluation. Changes as per the university guidelines shall be communicated from time to time.

## **Question paper Pattern (2019-20)**

### **(Choice Based Credit System)**

**F Y B A Compulsory English: Text: LITERARY GLEAM: A SELECTION OF PROSE AND POETRY**

**(70-Semester-End Exam & 30-Internal Evaluation)**

**SEMESTER-I      Hours: Three      Marks: 70**

**Q. 1)      A.** Attempt any One from the following questions:

(Two questions on **Prose piece -1**)

**B.** Attempt any One from the following questions:

(Two questions on **Prose piece -2**)

**Marks 14**

**Q. 2)      A.** Attempt any One from the following questions:

(Two questions on **Prose piece -3**)

**B.** Attempt any One from the following questions:

(Two questions on **Poem - 1**)

**Marks 14**

**Q. 3)      A.** Attempt any One from the following questions:

(Two questions on **Poem -2**)

**B.** Attempt any One from the following questions:

(Two questions on **Poem -3**)

**Marks 14**

**Q.4) Objective Questions on Grammar and Punctuation** as under:

- a. Use correct articles in the blank space in the sentences given below. (3 out of 5)
- b. Fill in the blanks with correct preposition given in the brackets. (3 out of 5)
- c. Look at the underlined verbs in the sentences below and specify whether it is a regular verb or irregular verb: (3 out of 5)
- d. Look at the underlined auxiliaries in the sentences below and specify whether it is a primary or a modal auxiliary: (3 out of 5)
- e. Punctuate and rewrite the following sentence correctly. **Marks 14**

**Q.5) Practical Questions on Communication Skills: 1, 2, 3, 4, 5.**

**Marks 14**

**Total Marks: 70**

## **SEMESTER - II**

### **Question Paper Format**

**Q. 1) A.** Attempt any One from the following questions:

(Two questions on **Prose piece -1**)

**B.** Attempt any One from the following questions:

(Two questions on **Prose piece -2**)

**Marks 14**

**Q. 2) A.** Attempt any One from the following questions:

(Two questions on **Prose piece -3**)

**B.** Attempt any One from the following questions:

(Two questions on **Poem - 1**)

**Marks 14**

**Q. 3) A.** Attempt any One from the following questions:

(Two questions on **Poem -2**)

**B.** Attempt any One from the following questions:

(Two questions on **Poem -3**)

**Marks 14**

**Q.4) Objective Questions on Grammar and Vocabulary** as under:

a. Fill in the blanks with correct tense form of the verb given in the brackets.

(6 out of 9)

b. Fill in the blanks using the appropriate form of the verb given in the brackets.

(4 out of 6)

c. Practical questions on vocabulary (e. g. Give synonyms/antonyms of the following words, Give a list of words related to computer/mobile/wild animals etc.)

(4 out of 6)

**Marks 14**

**Q.5) Practical Questions on Communication Skills:** 1, 2, 3, 4.

**Marks 14**

**Total Marks: 70**

**Pattern for Internal Evaluation in both the semesters:**

**1. Internal Mid-Semester Examination – 20**

**2. Home Assignments/Tutorials/Oral/Lecture Notes/Project - – 10**

**TOTAL – 30 Marks**

## **F Y B A -Optional English (General Paper-1)**

**Text: INITIATIONS: MINOR LITERARY FORMS & BASICS OF PHONOLOGY**

**(70-Semester-End Exam & 30-Internal Evaluation)**

**SEMESTER-I Hours: Three**

**Marks: 70**

### **Question Paper Format**

**Q. 1) A. Attempt any One from the following questions:**

(Two questions on **Prose piece -1**)

**B.** Attempt any One from the following questions:

(Two questions on **Prose piece -2**)

**Marks 14**

**Q. 2** **A.** Attempt any One from the following questions:

(Two questions on **Short Story -1**)

**B.** Attempt any One from the following questions:

(Two questions on **Short Story -2**)

**Marks 14**

**Q. 3)** Attempt any 02 out of the 04 given questions:

(Questions on the **Poems for the I st sem**)

**Marks -14**

**Q. 4)** Explain with reference to context (Any 2 out of 4 )

(**Questions on Poems for the Ist sem**)

:

**Marks 14**

**Q.5) A.** Write short notes: ( any 2 out of 4) :

**Marks 10**

**B.** Practical questions on phonology (any 4 out of 6) :

**Marks 04**

(**Questions on topics from Introduction to the Sounds of English Part –I**)

**Total Marks: 70**

## **SEMESTER - II**

**Hours: Three**

**Marks: 70**

### **Question Paper Format**

**Q. 1** **A.** Attempt any One from the following questions:

(Two questions on **Short Story -1 from II nd Sem**)

**B.** Attempt any One from the following questions:

(Two questions on **Short Story -2 from IInd Sem**)

**Marks 14**

**Q.2** Attempt any 02 out of the 04 given questions:

(Questions on the **Poems for the II nd Sem**)

**Marks -14**

**Q. 3** Explain with reference to context (Any 2 out of 4 )

(**Questions on Poetry for the II nd Sem**)

:

**Marks 14**

**Q. 4 A.** Attempt any One from the following questions:

(Two questions on **the First One Act Play**)

**B.** Attempt any One from the following questions:

(Two questions on **the Second One Act Play**)

**Marks 14**

**Q.5) A.** Write short notes: ( any 2 out of 4) :

**Marks 10**

B. Practical questions on phonology (any 4 out of 6) :

**Marks 04**

(**Questions on topics from Introduction to the Sounds of English Part –II**)

**Total Marks: 70**

**Pattern for Internal Evaluation in both the semesters:**

**1. Internal Mid-Semester Examination – 20**

**2. Home Assignments/Tutorials/Oral/Lecture Notes/Project/Seminar/G D – 10**

**TOTAL – 30 Marks**





## S. Y. B. A.

### Compulsory English (Core Course-CC)

**(Choice Based Credit System-70:30-Pattern)**

**(w. e. f- 2020-2021)**

**(03 Credit Course)**

#### **Preamble:**

The course aims at contributing to the overall personality development of the students. They have to be good human beings before anything else. This laudable aim involves instilling essential human values like tolerance, understanding, sympathy, respecting the differences, living in harmony with nature, protecting the environment etc. In our prose and poetry selections we have kept these considerations in mind. We offer an adequate mix of British, American, Indian and other writers and poets because we want our students to be responsive to an era of globalization but at the same time they have to be rooted in Indian culture and ethos.

Our students have to develop into responsible citizens of the world. They have to become confident and face the challenges of life successfully. Effective use of language is necessary for success in all walks of life. Hence we have focused on enhancing the linguistic skills of the students by concentrating on essential aspects of grammar and enrichment of vocabulary. Apart from the professional and technical qualifications of the employees, the present day employers generally look for certain soft skills which relate to some positive personality traits, attitudes and social skills. Hence the course includes units on some essential soft skills. The course is thus a value oriented and a skill-based course.

#### **Objectives:**

- a) To expose students to the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking.
  - b) To instill universal human values through best pieces of literature in English
  - c) To develop effective communication skills by developing ability to use right words in the right context.
  - d) To enhance employability of the students by developing their basic soft skills
  - e) To revise and reinforce the learning of some important areas of grammar for better linguistic competence.
- **Each** semester shall have 3 credits for teaching. Each credit is equal to 15 hours, so this course shall have 45 teaching hours. In addition to that there shall be 03 hours allotted to internal evaluation. ( $3 \times 15 = 45 + 3 = 48$ ). It is applicable to all other papers/courses.
  - **Considering** the choice-based credit system (CBCS) and the semester pattern, both Semesters-III & IV will have a uniform evaluation pattern of 100 marks each. There will be an 'Internal Examination' for 30 marks and 'Semester-end Examination' for 70 marks.
  - **The Internal** Examination for 30 marks will be conducted at college level.  
Assignment/group discussion/tutorial/seminar/oral/project for 10 marks  
A Mid-semester Written Test for 20 marks

## **Semester-III**

**Prescribed Text: *Panorama: Values and Skills through Literature* (Board of Editors- Orient BlackSwan)**

### **Unit-I- Prose**

1. A Simple Philosophy- **Seathl**
2. The Homecoming- **Rabindranath Tagore**
3. The Verger- **Somerset Maugham**

### **Unit-II- Poetry**

1. The Palanquin Bearers- **Sarojini Naidu**
2. On the Grasshopper and the Cricket- **John Keats**
3. Pied Beauty- **George Manley Hopkins**

### **Unit-III- Grammar**

1. The Passive Voice
2. Direct and Indirect Speech
3. Negative Sentences

### **Unit-IV- Vocabulary**

1. One-word substitutes
2. Idioms
3. Suffixes and prefixes

### **Unit-V- Soft Skills**

1. Leadership skills
2. Teamwork skills

## **Semester-IV**

**Prescribed Text: *Panorama: Values and Skills through Literature* (Board of Editors- Orient BlackSwan)**

### **Unit-I- Prose**

1. The Chicago Speech- **Swami Vivekananda**
2. The Lottery Ticket- **Anton Chekhov**
3. The Open Window- **Saki (H. H. Munro)**

### **Unit-II- Poetry**

1. On Another's Sorrow- **William Blake**
2. Laugh and Be Merry- **John Masefield**
3. The Rock and the Bubble- **Louisa May Alcott**

### **Unit-III- Grammar**

1. Question tags
2. Simple, Compound and Complex sentences
3. Degrees of Comparison

### **Unit-IV- Vocabulary**

1. Collocations: Words that go together
2. Phrasal Verbs
3. Commonly Confused Words

### **Unit-V- Soft Skills**

1. Problem-solving skills
2. Time management

## **Question paper Patterns**

### **SEMESTER-III** **(Semester-End Exam)**

**Time: Three Hours**

**Marks: 70**

- Q. 1) A.** Answer the following questions in one or two sentences each (6 out of 9) **Marks 06**  
**B.** Attempt the following: (Any 2 out of 3 questions) **Marks 14**  
(Questions on **Unit-I- Prose**)
- Q. 2) A.** Answer the following questions in one or two sentences each (6 out of 9) **Marks 06**  
**B.** Attempt the following: (Any 2 out of 3 questions) **Marks 14**  
(Questions on **Unit-II-Poetry**)
- Q. 3)** Objective questions on **Grammar** as under: **Marks 10**  
a) Change the following into passive voice (4 out of 6)  
b) Change the following into indirect speech (3 out of 5)  
c) Change the following into negative sentence (3 out of 5)
- Q.4)** Objective questions on **Vocabulary** as under: **Marks 10**  
a) Give one-word substitute for the following (4 out of 6)  
b) Match the following pairs of idioms and their meanings (3 out of 5)  
c) Give examples of the words with following suffixes/prefixes (3 out of 5)
- Q.5)** Answer the following questions in brief (2 out of 3) **Marks 10**  
(Questions on **Unit-V- Soft Skills**)

**SEMESTER-IV**  
**(Semester-End Exam)**

**Time: Three Hours**

**Marks: 70**

- Q. 1) A.** Answer the following questions in one/two sentences each (6 out of 9) **Marks 06**  
**B.** Attempt the following: (Any 2 out of 3 questions) **Marks 14**  
(Questions on **Unit-I-Prose**)
- Q. 2) A.** Answer the following questions in one/two sentences each (6 out of 9) **Marks 06**  
**B.** Attempt the following: (Any 2 out of 3 questions) **Marks 14**  
(Questions on **Unit-II- Poetry**)
- Q. 3) Objective questions on Grammar as under: Marks 10**  
a) Add question tags to the following. (4 out of 6)  
b) Identify the type of the sentence (simple/compound/complex) (3 out of 5)  
c) Change into comparative/superlative degree (3 out of 5)
- Q.4) Objective questions on Vocabulary as under: Marks 10**  
a) Specify whether the underlined collocation is right or wrong. (4 out of 6)  
b) Fill in the blanks with correct phrasal verbs chosen from those given in the brackets (3 out of 5)  
c) Complete the sentences with an appropriate word chosen from those in the brackets (3 out of 5)
- Q.5) Answer the following questions in brief (2 out of 3) Marks 10**  
(Questions on **Unit-V- Soft Skills**)

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## **S. Y. B. A.**

### **Skill Enhancement Course-SEC-1A**

**(Old General English-G-2)**

**(Choice Based Credit System-70:30-Pattern)**

**(w. e. f- 2020-2021)**

**(03 Credit Course)**

**Title of the Paper: Advanced Study of English Language**

**Prescribed Text: *Linguistics: An Introduction-* (Ed. Board of Editors, Orient BlackSwan)**

#### **Preamble:**

Language is basically a skill-based subject. The present course is a skill enhancement course. Effective use of language involves multiple skills, namely listening, speaking, reading and writing. In order to acquire these skills and become efficient users of language our students need to be conversant with different aspects of language. Thus the students need to know phonological aspects of language like correct pronunciation, stress, tone groups, intonation patterns etc. The basics of morphology acquaint students with the structure of words and word formation processes. Morphology combined with lexical semantics contributes to the enrichment of vocabulary and helps the students to use right words in a right place in their communication. English in India is a second language and in a second language learning situation, developing insight into the process of sentence formation is very important. Syntax part of the course takes care of this crucial aspect in the development of language skills.

Mere correctness of language is not enough. We have to use language appropriately in a given context. Grounding in pragmatics contributes to the language skills of students by helping them produce contextually appropriate utterances. The sociolinguistics part of the course focuses on language variation because language is not a monolithic phenomenon. Awareness of diversity in language use can make the learner a better user of language. The course thus enhances the linguistic and communicative skills of the students.

#### **Objectives of the Course:**

- a) To familiarize students with the various components of language.
- b) To develop overall linguistic competence of the students.
- c) To introduce students to some advanced areas of language study.
- d) To prepare students to go for detailed study and understanding of language.

### **Semester-III**

#### **Course Content-**

1. Phonetics and Phonology part from- **Linguistics: An Introduction**
2. Morphology part from- **Linguistics: An Introduction**

### 3. Sociolinguistics part from- **Linguistics: An Introduction**

(Following topics from **chapter – 1, 2, 3 and 4 of the prescribed book**)

#### **1. Phonology:**

**15 Clock Hours**

1. Organs of speech, speech mechanisms,
2. Description and classification of consonants and vowels,
3. Concept of syllable,
4. Word accent, sentence accent,
5. Tone groups, placement of nuclear/tonic accent,
6. Concept of intonation, uses/types of tones

#### **2. Morphology:**

**15 Clock Hours**

1. What is morphology?
2. Concept of morpheme, allomorph, zero allomorph, types of morphemes (free and - bound), Prefixes and Suffixes (class-changing and class-maintaining),
3. Inflectional and Derivational suffixes, borrowings

#### **3. Sociolinguistics:**

**15 Clock Hours**

1. National varieties of English: British, American and Indian
2. Regional and social dialects, standard dialect, concept of register, formal and informal styles
3. Pidgins and Creoles, code-switching and code mixing

## **Semester-IV**

**Prescribed Text: *Linguistics: An Introduction-* (Ed. Board of Editors, Orient BlackSwan**

#### **Course Content-**

1. Syntax part from- **Linguistics: An Introduction**
2. Semantics part from- **Linguistics: An Introduction**
3. Pragmatics part from- **Linguistics: An Introduction**

(Following topics from **chapter – 5, 6 and 7 of the prescribed book**)

#### **1. Syntax:**

**15 Clock Hours**

1. Concept of Phrase, Phrase structure rules/ types of Phrases: Noun phrase, Adjective phrase, Adverb phrase, Prepositional phrase and Verb phrase.
2. Concept of Clause, Parts of Clauses: Subjects and objects, complements and Adverbials, Concept of Subject –verb Concord, Clause patterns.
3. Types of Sentences: Structural Classification - Simple Sentence, Compound Sentence and Complex sentence
4. Types of Sentences: Functional Classification - (affirmatives/interrogatives/imperatives) Wh –questions, Yes-No Questions, Tag

Questions, Negative Sentences, Do-support, Imperatives

**2. Semantics:** (Introductory)

**15 Clock Hours**

1. What is Semantics? Difference between Denotative and Connotative meaning.
2. Lexical relations: Synonymy, Antonymy, Homonymy, Homography and Homophony, Polysemy, Difference between Homonymy and Polysemy, Superordinate terms and Hyponymy, Metonymy.

**3. Pragmatics:** (Introductory)

**15 Clock Hours**

1. What is Pragmatics?
2. Speech Acts: Types
  - a. Austin's typology - locutionary, illocutionary, perlocutionary.
  - b. Searle's typology – the six types
  - c. Direct and Indirect Speech Acts
3. The Co-operative Principle and Its Maxims
4. The Politeness Principle and Its Maxims

- As indicated in the CBCS (Choice Based Credit System) Restructured Programme of Savitribai Phule Pune University at undergraduate level to be introduced from the academic year 2019-20, this subject SEC (old-G-2-General English), like other subjects under B.A. Degree Course, shall have 70 +30 pattern. There will be written examination of 70 marks of 3 hrs duration for this subject at the end of each semester. The class work (internal evaluation) shall carry 30 marks. Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours so this course shall have 45 teaching hours. In addition to that there shall be 03 hours allotted to internal evaluation.

**Reference Books:**

1. Study of Language: An Introduction – George Yule, (CUP, 1985)
2. English Grammar for Today: A New Introduction – Margaret Deuchar, Geoffrey Leech, Robert Hoogenraad (Palgrave Macmillan, 1982)
3. Semantics – F.R. Palmer (CUP, 1981)
4. Pragmatics - George Yule, (OUP, 2000)
5. Modern Linguistics: An Introduction - Verma and Krishnaswamy (OUP, 1989)
6. Pragmatics and Discourse: A Resource Book for Students - Joan Cutting, (Routledge, 2002)
7. Structure and Meaning in English – Graeme Kennedy (Pearson, 2011)
8. Making Sense of English: A Textbook of Sounds, Words and Grammar – M.A. Yadugiri (New Delhi: Viva Books Pvt. Ltd., 2006)

**Question Paper Patterns**  
**(Semester-III)**  
**(Sem-End Exam)**  
**(w.e.f- 2020-21)**

**Time: Three Hours**

**Total Marks: 70**

- |   |                 |
|---|-----------------|
| Q. 1) Attempt any three out of five questions-<br>(Short notes on <b>Phonology part</b> )   | <b>15 Marks</b> |
| Q. 2) Attempt following questions-<br>(Practical/Objective questions on <b>Phonology part</b> )<br>A) Transcribe the words (Five out of Seven) - 10 marks<br>B) Do as directed (Five out of Seven) - 05 Marks | <b>15 Marks</b> |
| Q. 3) Attempt any four out of six questions-<br>(Questions on <b>Morphology</b> )   | <b>20 Marks</b> |
| Q. 4) Attempt any four out of six questions-<br>(Questions on <b>Sociolinguistics</b> )   | <b>20 Marks</b> |

**Question Paper Patterns**  
**(Semester-IV)**  
**(Sem-End Exam)**  
**(w.e.f- 2020-21)**

**Time: Three Hours**

**Total Marks: 70**

- |   |                 |
|---|-----------------|
| Q. 1) Attempt any three out of five questions-<br>(Questions on <b>Syntax</b> )                 | <b>15 Marks</b> |
| Q. 2) Attempt any three out of five questions-<br>(Questions on <b>Syntax &amp; Semantics</b> ) | <b>15 Marks</b> |
| Q. 3) Attempt any three out of five questions-<br>(Questions on <b>Semantics</b> )              | <b>20 Marks</b> |
| Q. 4) Attempt any four out of six questions-<br>(Questions on <b>Pragmatics</b> )               | <b>20 Marks</b> |

**Internal Evaluation-Total-30 Marks**  
**(Applicable to both Semesters III & IV)**

1. Written Test - **20 Marks**
2. Project/Group Discussion/ Tutorial/ Home Assignment/ Seminar/ Participation in a Classroom Activity- **10 Marks**

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## **S. Y. B. A.**

### **Discipline Specific Course (DSC-1A)**

**(Old Special Paper-I)**

**(Choice Based Credit System-70:30-Pattern)**

**(w. e. f- 2020-2021)**

**(03 Credit Course)**

#### **Title of the Paper: Appreciating Drama**

##### **Preamble:**

Drama is an age-old form of literature. Moreover, it is a performing art form. It has been undergoing several transformations in its form and performance till date. In this sense, the world of drama has been exploring and exposing very many distinguishing theoretical, literary and theatrical dimensions. At the backdrop of the very dynamics of drama, the syllabus prescribed under this paper attempts to give justice to the multi-dimensional aspects of drama. The course contents and the evaluation patterns are radically designed to keep pace with the age of technology and to empower the learners for futuristic academic avenues.

##### **Objectives:**

1. To introduce Drama as a major form of literature
2. To introduce minor forms of Drama
3. To acquaint and enlighten students regarding the literary and the performing dimensions of drama
4. To acquaint and familiarize the students with the elements and the types of Drama
5. To encourage students to make a detailed study of a few sample masterpieces of English Drama from different parts of the world
6. To develop interest among the students to appreciate and analyze drama independently
7. To enhance students' awareness regarding aesthetics of Drama and to empower them to evaluate drama independently

### **Semester-III**

#### **Course contents-**

#### **UNIT-I**

##### **Theory of Drama:**

1. Drama, the Literary Form
2. Drama, the Performing Art Form
3. Elements of Drama:
  - i) Literary Elements: (Theme, Plot, Characters, Diction, Conflict, Setting etc.)
  - ii) Theatrical Elements: (Stage directions, Light effects, Music, Costumes, Stage

- property, Makeup etc.)
4. Types of Drama: (Tragedy, Comedy, Tragicomedy, Problem play, Absurd drama)
  5. An Introduction to Minor Forms of Drama: (e.g. One-act-play, Skit, Street play, a short Radio play, Pantomime etc.)

#### **UNIT-II**

**A Midsummer Night's Dream** by William Shakespeare

### **Semester-IV**

#### **Title of the Paper: Appreciating Drama**

#### **UNIT-I**

**Arms and the Man** by George Bernard Shaw

#### **UNIT-II**

**The Fire and the Rain** by Girish Karnad

#### **Select Bibliography:**

1. Abrams M.H. 1957. A Glossary of Literary Terms. Madras: Macmillan India Press.
2. Anandlal. 2004. Ed. The Oxford Companion to Indian Theatre. New Delhi: Oxford University Press.
3. Berthold M. 1999. The History of World Theatre. New York: Continuum.
4. Briggs J. & Jefferson N.C. 2003. Encyclopedia of Stage Lighting. : McFarland
5. Brown J.R. 1972. Theatre Language. London: The Penguin Press.
6. Craig E.G. 1911. On the Art of the Theatre. London: William Heinemann Ltd.
7. Crook T. 1999. Radio Drama. Routledge; 1st Edition
8. Dharwadkar A. 2005. Theatres of Independence. New Delhi: Oxford University Press
9. Hughes M. 2013. A History of Pantomime. Remember When
10. Jagdale U.S. 2014. Communication in Drama: A Pragmatic Approach. PartridgeIndia.
11. Mamet D. 1994. Goldberg Street: Short Plays and Monologues. Grove Press

12. Pease A. 1998. Body Language. London: Sheldon Press.
13. Srampickal J. 1994. Voice to the Voiceless: the Power of People's Theatre in India. London: Hurst & Company.
14. Stanislavski C. 1981. Creating a Role. London: Methuen Publishing Ltd.
15. Zuber O. 1980. Ed. The Languages of Theatre. Oxford: Pergamon Press

### **EVALUATION PATTERN**

Considering the choice-based credit system (CBCS) and the semester pattern, both Semester-3 and Semester-4 will have a uniform evaluation pattern of 100 marks each. There will be an 'Internal Examination' for 30 marks followed by a 'Semester-end Examination' for 70 marks.

The Internal Examination for 30 marks will be conducted in two parts.

#### **1) Practical Examination for 10 marks:**

The practical examination aims at testing practical applications of the course contents. Hence, the evaluation pattern has to be a practical one. The following choice-based modes of evaluation can be considered in this concern.

(**Modes of evaluation:** Dramatic performances, Group discussions, Seminars, Project presentations, Library work, Oral examination etc.)

**In Semester-III**, the practical examination aims at testing practical applications of Unit-I: 'Theory of Drama' on the basis of the above-mentioned choices of evaluation modes.

**In Semester-IV**, the practical examination aims at testing practical applications of Unit-I: **Arms and the Man** on the basis of the above-mentioned choices of evaluation modes.

#### **2) A Mid-semester Written Test for 20 marks:**

Being a written test, it aims at testing the theoretical subject knowledge of the students, on the basis of the semester-wise syllabus given below.

**For Semester-III** the syllabus for the test will be **Unit-I: 'Theory of Drama'**.

**For Semester-IV** the syllabus for the test will be **Unit-I: Arms and the Man**.

### **SEMESTER-III**

### **SEMESTER-END EXAMINATION**

#### **Question Paper Pattern**

**Marks: 70**

**Time: 3 Clock Hours**

**Instructions:**

**1. All questions are compulsory.                      2. Figures to the right indicate full marks.**

- Q.1) Short-answer questions on the play A Midsummer Night's Dream  
(3 out of 5) (15)
- Q.2) Short-answer questions on the play A Midsummer Night's Dream  
(3 out of 5) (15)
- Q.3) Long-answer questions on the play A Midsummer Night's Dream  
(1 out of 2) (10)
- Q.4) Long-answer question on the play A Midsummer Night's Dream  
(1 out of 2) (10)
- Q.5) Short-answer questions on the theory topics 'Types of Drama' and 'An Introduction to  
Minor Forms of Drama'  
(4 out of 6) (20)

**SEMESTER-IV**

**SEMESTER-END EXAMINATION**

**Question Paper Pattern**

**Marks: 70**

**Time: 3 Clock Hours**

**Instructions:**

1. All questions are compulsory.                      2. Figures to the right indicate full marks.

- Q.1) Short-answer questions on the play The Fire and the Rain  
(3 out of 5) (15)
- Q.2) Short-answer questions on the play The Fire and the Rain  
(3 out of 5) (15)
- Q.3) Long-answer questions on the play Arms and the Man  
(1 out of 2) (10)
- Q.4) Long-answer questions on the play Arms and the Man  
(1 out of 2) (10)
- Q.5) Short-answer questions on The Fire and the Rain  
(4 out of 6) (20)

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## **S. Y. B. A.**

### **Discipline Specific Course (DSC-2A)**

**(Old Special Paper-II)**

**(Choice Based Credit System-70:30-Pattern)**

**(w. e. f- 2020-2021)**

**(03 Credit Course)**

### **Title of the Paper: Appreciating Poetry**

#### **Rationale:**

Poetry has been the oldest form of literature and continues to be an important part of art and culture. It conveys a thought, describes a scene, or narrates a story in a concentrated, lyrical arrangement of words. It can be structured with rhyming lines and meter or can also be freeform that follows no formal structure. Poetry on the level of content offers a huge variety of aesthetic and worldly experiences. It offers new perspectives to look at the usual matters. The present course is designed in line with such liberating and enriching nature of poetry. This is an introductory course and it is intended that students learn the basics of poetry through its theory and the practical application of some of the terms related to poetry. Given its elementary nature this course cannot afford to be ambitious in its scope and selection of poems. Poems are not necessarily selected from different nationalities and cultures and no specific theme is maintained in the selection of poems. However it is seen in the selection that students get exposed to a variety of experiences through poems of different mold and that their aesthetic and human sensibilities get enriched.

#### **Objectives:**

1. To acquaint students with the terminology in poetry criticism (i.e. the terms used in appreciation and critical analysis of poems)
2. To encourage students to make a detailed study of a few sample masterpieces of English poetry
3. To enhance students awareness in the aesthetics of poetry and to empower them to read, appreciate and critically evaluate poetry independently

### **Semester-III**

#### **Course Content-**

**Prescribed Text: *Mirage: An Anthology of English Poetry* Ed. Board of Editors, Orient Blackswan**

#### **A) Theory of Poetry**

- (a) What is poetry? Significant development in the art of poetry during major periods
- (b) Elements of poetry: Rhythm, Meter, Sound Structure, Stanza Forms,
- (c) Figures of Speech, Symbols, Imagery, Simile, Metaphor, Personification and other Poetic Devices like Repetition and Contrast.
- (d) Types of Poetry: Elegy, Sonnet, Dramatic Monologue, Lyric, Ode, Ballad

## **B) Poems:**

1. The Nightingale- **Philip Sidney**
2. Sonnet 3- **William Shakespeare**
3. The Sun Rising- **John Donne**
4. London- **William Blake**
5. Ode on a Grecian Urn- **John Keats**
6. To a Skylark- **P. B. Shelley**

## **Semester-IV**

**Prescribed Text: *Mirage: An Anthology of English Poetry* Ed. Board of Editors, Orient Blackswan**

### **Poems:**

1. My Last Duchess- **Robert Browning**
2. Sailing to Byzantium- **W. B. Yeats**
3. Futility- **Wilfred Owen**
4. A Bird Came Down the Walk- **Emily Dickinson**
5. Talking in Their Sleep- **Edith M. Thomas**
6. What Is Life- **John Clare**
7. Sympathy- **Paul Laurence Dunbar**
8. The Awakening- **James Weldon Johnson**
9. The Wind- **Amy Lowell**
10. Freedom- **Rabindranath Tagore**
11. Caged Bird- **Maya Angelou**
12. Failure of Communication- **Judith Wright**

### **Select Bibliography:**

1. Abrams M.H. 1957. *A Glossary of Literary Terms*. Madras: Macmillan India Press.
2. Drew Elizabeth. 1959. *Poetry- A Modern Guide to Its Understanding and Enjoyment*. Dell Publishing Co.
3. Lennard John. 2005. *The Poetry Handbook: A Guide to Reading Poetry for Pleasure and Practical Criticism*. OUP.
4. Moon Brian. 2001. *Studying Poetry: Activities, Resources and Texts*. NCTE.
5. Oliver Mary. 1994. *A Poetry Handbook*. Harcourt Brace & Company.
6. Williams Rhian. 2009. *The Poetry Tool Kit: The Essential Guide to Studying Poetry*. Bloomsbury
7. Wolosky Shira. 2001. *The Art of Poetry: How to Read Poem*. OUP.

## **EVALUATION PATTERNS**

As indicated in the CBCS (Choice Based Credit System) Restructured Programme of Savitribai Phule Pune University at undergraduate level, this course shall have 70+30 pattern. There will be a written examination of 70 marks of 3 hours duration for this course at the end of each semester. The class work (internal evaluation) shall carry 30 marks. Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours so this course shall have 45 teaching hours. In addition to that there shall be three hours allotted to internal evaluation.

**The Internal Evaluation for 30 marks shall be conducted in two parts-**

**1) Practical Examination for 10 marks:**

The practical examination aims at testing practical application of the course contents. Hence, the evaluation pattern has to be a practical one. The following choice-based modes of evaluation may be considered-

**Modes of evaluation:** Recitation of Poems, Group discussions, Seminars, Project Presentations, Library Work, Oral Examination, etc.

**2) Written Test for 20 marks**

### **SEMESTER-III**

#### **SEMESTER-END EXAMINATION**

**(Question Paper Pattern)**

**Time: Three Hours**

**Total Marks: -70**

- |   |      |
|---|------|
| Q 1- Questions on the theory of poetry (5 out of 7)<br>(Elements of Poetry, Types of Poetry)                      | [10] |
| Q 2- Practical questions on the application of theory to the poems prescribed (5 out of 7)<br>(Figures of Speech) | [10] |
| Q 3-Theme-based questions on the poems prescribed (2 out of 3)  | [20] |
| Q 4- Theme-based questions on the poems prescribed (2 out of 3)   | [20] |
| Q 5- Reference to context (2 out of 4)  | [10] |

### **SEMESTER-IV**

#### **SEMESTER-END EXAMINATION**

**(Question Paper Pattern)**

**Time: Three Hours**

**Total Marks: 70**

- |  |      |
|--|------|
| Q-1- Theme-based questions on the poems prescribed (3out of 5)<br>(Questions on Poems 1, 2, 3)   | [15] |
| Q. 2- Theme-based questions on the poems prescribed (3 out of 5)<br>(Questions on Poems 4, 5, 6) | [15] |

- Q 3- Theme-based questions on the poems prescribed (3 out of 5) [15]  
(Questions on Poems 7, 8, 9)
- Q 4- Theme-based questions on the poems prescribed (3 out of 5) [15]  
(Questions on Poems 10, 11, 12)
- Q 5- Reference to context- poems prescribed (2 out of 4) [10]

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(S.Y.B.A)

**Skill Enhancement Course-(SEC-2A & 2B)**  
**(w.e.f-2020- 2021)**

**“A Certificate Course in Skill Development”**

**[Two Credit Course For Each -Sem-III & IV -2x15=30 Hours For Each Sem]**

**Objectives:**

1. Enhancing the skill of using English for everyday communication
2. To acquaint the students with the verbal and nonverbal communication
3. To create opportunities to access exposure of speaking in various contexts
4. To acquaint and familiarize the students with soft skills
5. To develop interest among the students to interact in English

**Suggestions to Teachers:**

1. It is a learner-centric course.
2. The course aims at developing skill among the students.
3. Learning can be facilitated through interactive and informal guiding sessions.
4. Participation and up-gradation of the students' performance needs to be encouraged.
5. Practicals, Exercises, Activity monitoring, Projects, Seminars, Presentations, Group Discussions are some of the activities that the teachers are expected to encourage.
6. Relevant and innovative ideas of both the students and the teachers are always appreciable for a successful completion of this course
7. The concerned faculty/teachers have to maintain the record of the students (Given in the Evaluation pattern) as the credits to the students need to be given on the basis of preserved record.
8. **Nature of Evaluation-** Internal (College) 25 Marks and Semester End University Examination- 25 Marks

**SEMESTER-III- (SEC 2-A)**

**Course content:**

**Unit-I**

- 1- Introducing Yourself and Others
- 2- Joining and Leaving Conversation
- 3- Accepting/Declining Invitations

**Unit-II**

- 4- Asking/Giving/Refusing Permission
- 5- Digital Literacy
- 6- Project Management

## **Question paper pattern**

### **SEMESTER-III- (SEC 2-A)**

<u>Question-1-</u> Attempt any ONE of the following. (1 Out of 2- Unit-I)	10 Marks
<u>Question-2-</u> Attempt any ONE of the following. (1 Out of 2- Unit-II)	10 Marks
<u>Question-3-</u> Attempt any ONE of the following. (1 Out of 2- Unit- I & II)	05 Marks
<b>Total Marks- 25</b>	

### **SEMESTER-IV- (SEC 2-B)**

#### **Course content:**

##### **Unit-I**

- 1- Asking/Giving/Refusing Information
- 2- Agreeing/Partial Agreeing/Disagreeing
- 3- Complaining

##### **Unit-II**

- 4- Apologizing
- 5- Vocabulary Building
- 6- Delivering a Speech

## **Question paper pattern**

### **SEMESTER-IV (SEC 2-B)**

<u>Question-1-</u> Attempt any ONE of the following. (1 Out of 2- Unit-I)	10 Marks
<u>Question-2-</u> Attempt any ONE of the following. (1 Out of 2- Unit-II)	10 Marks
<u>Question-3-</u> Attempt any ONE of the following. (1 Out of 2- Unit-I & II)	05 Marks
<b>Total Marks- 25</b>	

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# Savitribai Phule Pune University

*(Formerly University of Pune)*

## S.Y.B.A. (Geography) Correction

Choice Based Credit System Syllabus

To be implemented from Academic Year 2020-2021

Semester	Core Courses	Paper No	Paper Code	Subject	Total Lecture	Credit
III	Geography CC-1C	G2	Gg: 201(A)	Environmental Geography I OR Economic Geography -I	48	3
	Geography DSE – 1A	S1	Gg: 220(A)	Geography of Maharashtra - I OR Population Geography – I	48	3
	Geography DSE – 2A	S2	Gg: 210(A)	Practical Geography – I (Scale and Map Projections)	60	4
	SEC-I		SEC - A	Introduction to Geographical Information System (GIS) / Applied Course of Disaster	30	2

				Management		
IV	Geography CC-1C	G2	Gg: 201(B)	Environmental Geography II OR Economic Geography -II	48	
	Geography DSE – 1B	S1	Gg: 210(B)	Geography of Maharashtra – II OR Population Geography – II	48	3
	Geography DSE – 2B	S2	Gg: 220(B)	Practical Geography – II (Cartographic Techniques, Surveying and Excursion / Village / Project Report)	60	4
	SEC-I		SEC - B	& Introduction to Remote Sensing / Applied Course of Travel & Tourism	30	2

### S. Y. B. A. GEOGRAPHY

#### Equivalence of Previous syllabus along with new syllabus:

Pager	Old Course (2013 Annual Pattern)	New Course (2019 Semester Pattern)
G2	Gg-210 Elements of Climatology and Oceanography OR	Gg: 210(A)Environmental Geography I OR Gg: 210(A)Economic Geography -I
G2	Gg-210 Geography of Disaster Management	Gg: 210(B)Environmental Geography II OR Gg: 210(B)Economic Geography -II
S1	Gg-220 Economic Geography OR	Gg: 220(A)Geography of Maharashtra - I OR Gg: 220(A) Population Geography – I
S1	Gg-220 Tourism Geography	Gg: 220(B) Geography of Maharashtra – II OR Gg: 220(B) Population Geography – II
S2	Gg-201 Fundamentals of Geographical Analysis	Gg: 201(A)Practical Geography – I (Scale and Map Projections)
S2		Gg: 201(B)Practical Geography – II (Cartographic Techniques, Surveying and Excursion / Village / Project Report)

**S.Y.B.A. Geography (G2) Syllabus for Semester III****Name of Subject: Environment Geography- I, Subject Code: Gg.210 (A)****Objectives:**

1. To create the awareness about dynamic environment among the student.
2. To acquaint the students with fundamental concepts of environment geography for development in different areas.
3. The students should be able to integrate various factors of Environment and dynamic aspect of Environmental geography.
4. To make aware the students about the problems of environment , their utilization and conservation in the view of sustainable development

**Course Outcome:**

1. Create awareness about dynamic environment among the student.
2. To acquaint the students with fundamental concepts of environment geography for development in different areas.
3. The students should be able to integrate various factors of economic development and dynamic aspect of economic geography.
4. To make aware the students about the problems of environment, their utilization and conservation in the view of sustainable development.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Introduction to Environmental Geography	<ol style="list-style-type: none"> <li>1. Definition, Nature and scope of Environmental Geography.</li> <li>2. Types of Environment</li> <li>3. Importance of Environmental Geography</li> <li>4. Approaches to study of environmental Geography</li> </ol>	12	03
2	Ecosystem	<ol style="list-style-type: none"> <li>1. Meaning, concept and definition of ecosystem.</li> <li>2. Structure ( Biotic and Abiotic factors) and food chain, Tropic Level, food web, energy flow</li> <li>3. Types of ecosystem               <ol style="list-style-type: none"> <li>a) Equatorial Forest and</li> <li>b) Pond Ecosystem</li> </ol> </li> </ol>	12	
3	Biodiversity and its conservation	<ol style="list-style-type: none"> <li>1. Concept of biodiversity</li> <li>2. Economic value and potential of biodiversity</li> <li>3. Loss of biodiversity and hotspots in India</li> <li>4. Conservation of biodiversity</li> </ol>	12	
4	Environmental Pollution	<ol style="list-style-type: none"> <li>1. Concept of Pollution</li> <li>2. Air pollution-Causes, effects and control measures</li> <li>3. Water pollution-Causes, effects and control measures</li> <li>4. Soil pollution-Causes, effects and control measures</li> </ol>	12	

1. Miller G.T., 2004, Environmental Science Working with the Earth, Thomson Books Cole, Singapore
2. Saxena H.M., 2017, Environmental Geography( Ed III), Rawat Publications, Jaipur
3. Odum E.P. et al.2005, Fundamentals of Ecology, Ceneage Learning, India
4. Sharma P.D.2015, Ecology and Environment, Rastogi Publications,Meerut
5. Kormondy, Edward J, 2012, Concept of Ecology, PHI Learning Pvt.Ltd,New Delhi
6. Singh R.B.(Eds) 2009, Biogeography and Biodiversity, Rawat Publications, Jaipur
7. Singh S,Prayag, 1997, Environment Geography, Pustak Bhawan, Allahabad
8. Chandana R.C.2002, Environmental Geography, Kalyani Publication, Ludhiana
9. Goudie A, 2001, The Nature of The Environment, Blackwell ,Oxford
10. Gholap T. N., 2000, Environment Science, Nishikant Publications, Pune. (Marathi)
11. Choudhar A.H., & et. al., 2014, Disaster Management, Atharva Publication, Pune. (Marathi)
12. Musmade A. H., More J. C. 2014, Geography of Disaster Management, Diamond Publication, Pune. (Marathi)
13. Saptarshi P. G., More J. C., Ugale V. R., 2009, Geography and Natural Hazads, Diamond Publishing, Pune. (Marathi)

**S.Y.B.A. Geography (G2) Syllabus for Semester IV****Name of Subject: Environment Geography- II, Subject Code: Gg.210 (B)****Objectives:**

1. To create awareness about dynamic environment among the students.
2. To acquaint students with the fundamental concepts of Environment Geography.
3. To acquaint students about the past, presents and future utility and potentials of natural resources.
4. To make aware students about the problems of environment, its utilization and conservation in the view of sustainable development.

**Course Outcome:**

1. Create awareness about dynamic environment among the students.
2. To acquaint students with the fundamental concepts of Environmental Geography.
3. To acquaint students about the past, presents and future utility and potentials of natural resources.
4. To make aware students about the problems of environment, its utilization and conservation in the view of sustainable development.
- 5.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Environmental Disaster	1. Meaning and concepts of environmental disaster 2. Classification of Disaster 3. Natural Disaster a) Earthquake b) Flood 4. Biological Disaster a) Swine flu b) Novel Corona (COVID-19)	12	03
2	Environmental Problems	1. Global Warming and climate change 2. Ozone Depletion 3. Acid rain 4. Over use of chemical fertilizers, pesticides and insecticides	12	
3	Environmental Planning and Management	1. Need of Planning and Management 2. Micro, macro and meso level Planning and Management with reference to India 3. Environmental impact assessment	12	
4	Environmental Policies	1. Introduction of environmental policies 2. Environmental education in India 3. Kyoto Protocol	12	

**Reference Book:**

1. Miller G.T., 2004, Environmental Science Working with the Earth, Thomson Books Cole, Singapore
2. Saxena H.M., 2017, Environmental Geography, ( III ED) Rawat Publications, Jaipur
3. Odum E.P. et al.2005, Fundamentals of Ecology, Ceneage Learning, India
4. Sharma P.D.2015, Ecology and Environment, Rastogi Publications, Meerut



5. Kormondy, Edward J, 2012, Concept of Ecology, PHI Learning Pvt. Ltd, New Delhi
6. Singh R.B.(Eds) 2009, Biogeography and Biodiversity, Rawat Publications, Jaipur
7. Singh S, Prayag, 1997, Environment Geography, Pustak Bhawan, Allahabad
8. Chandana R.C. 2002, Environmental Geography, Kalyani Publication, Ludhiana
9. Goudie A, 2001, The Nature of The Environment, Blackwell ,Oxford
10. Gholap T. N., 2000, Environment Science, Nishikant Publications, Pune. (Marathi)
11. Choudhar A.H., & et. al., 2014, Disaster Management, Atharv Publication, Pune. (Marathi)
12. Musmade A. H., More J. C. 2014, Geography of Disaster Management, Diamond Publication, Pune. (Marathi)
13. Saptarshi P. G., More J. C., Ugale V. R., 2009, Geography and Natural Hazards, Diamond Publishing, Pune. (Marathi)

**S.Y.B.A. Geography (G2) Syllabus for Semester III****Name of Subject: Economic Geography- I, Subject Code: Gg.210 (A)****Objectives:**

1. To introduce students to the basic principles and concepts of economic geography
2. To acquaint students with the applications to economic geography for development in different areas
3. The students should be able to integrate various factors of economic development and dynamic aspect of economic geography.

**Course Outcome:**

1. The principles and fundamental concepts in economic geography.
2. The application of concepts in economic geography for development in different areas.
3. To integrate the various concepts in economic geography with factors of economic development.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Introduction to Economic Geography	<ol style="list-style-type: none"> <li>1. Definition, nature and scope of economic geography.</li> <li>2. Need and significance of economic geography</li> <li>3. Economic geography and its relation with social sciences</li> <li>4. Approaches of the study of economic geography</li> </ol>	12	03
2	Economic Activity	<ol style="list-style-type: none"> <li>1. Introduction and concept of economic activity with problems and prospect</li> <li>2. Primary activity</li> <li>3. Secondary activity</li> <li>4. Tertiary activity</li> </ol>	12	
3	Concept and classification of resources	<ol style="list-style-type: none"> <li>1. Concept of resources</li> <li>2. Renewable energy Resources               <ol style="list-style-type: none"> <li>i. Hydro electricity</li> <li>ii. Solar energy</li> <li>iii. Wind energy</li> </ol> </li> <li>3. Non-renewable Resources               <ol style="list-style-type: none"> <li>i. Coal,</li> <li>ii. Iron ore</li> <li>iii. Mineral oil</li> </ol> </li> <li>4. Conservation of resources</li> </ol>	12	
4	Agriculture	<ol style="list-style-type: none"> <li>1. Role of Agriculture in Indian economy</li> <li>2. Factors influencing agriculture in India               <ol style="list-style-type: none"> <li>a) Physical</li> <li>b) Socio-economic</li> <li>c) Political and cultural</li> </ol> </li> <li>3. Agro-based industries in India               <ol style="list-style-type: none"> <li>a) Dairy industry</li> <li>b) Cotton industry</li> </ol> </li> <li>4. Agro –Tourism</li> </ol>	12	

**Reference Books :**

1. Gautam A., 2010, Advance Economic Geography, Sharda Pustak Bhavan, Allahabad
2. Chauhan R. N., 2007, Basic Principles of Economic Geography, ABD Publishers, Jaipur
3. Padey P. N., Economic Geography, Nirali Publication ,Pune
4. Sadhukhan S. K., 1994, Economic Geography An Appraisal of Resources, S Chand & Company Ltd ,New Delhi
5. Roy P., Mukherjee S., 1993, Economic Geography: Resource Appraisal of resources- New Central Book Agency, Calcutta
6. Mannur H. G., 2008, International Economics, Vikas Publishing House PvtLtd,Noida
7. Siddharth K., 2003, Economic Geography, Theories, Processes &Patterns, Kisalaya Publications Pvt, Ltd, Noida
8. Husain M., 2008, Geography of India, Tata McGraw Hill, New Delhi
9. Bhat L. S., 1973, Regional Planning in India, Statistical Publishing Society, Kolkata
10. Desai V,1991, Fundamentals of Rural Development, Rawat Publications, New Delhi
11. Paranjape, Gupte, Karmarkar, 1974, Economic & Commercial Geography, Nirali Publication, Pune.
12. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune
13. Pagar S.D., Thorat A. M., More J. C., 2015, Agriculture Geography, Atharav Publication, Pune.

**S.Y.B.A. Geography (G2) Syllabus for Semester IV****Name of Subject: Economic Geography- II, Subject Code: Gg.210 (B)****Objectives:**

1. To acquaint students with the basic principles and concepts of economic geography
2. To acquaint the students with the applications to economic geography for development in different areas.
3. The main aims are to integrate the various factors of economic development and to acquaint the students with this dynamic aspect of economic geography.

**Course Outcome:**

1. Create awareness about dynamic environment among the students.
2. To acquaint students with the fundamental concepts of Environmental Geography.
3. To acquaint students about the past, presents and future utility and potentials of natural resources.
4. To make aware students about the problems of environment, its utilization and conservation in the view of sustainable development.

Sr.No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Trade and Transport	1.Modes of Transportation and their cost effectiveness Significance of a) Road b) Rail c) Air 2.Treansportation cost of Major types 3,Types of Trade a) National b) International 4.International trade of India	12	03
2	Industries	1. Factors influencing on location of industries. 2. Weber's theory of industrial location 3. Major industrial regions in India 4. a) Iron and steel industry in India b) Sugar Industry in Maharashtra	12	
3	Regional Planning Development	1. Concept of regional planning and development. Their importance 2. Objectives of regional planning 3. Regional and sectoral imbalance in India	12	
4	Rural Development in India	1. Concept of rural development 2. Index of rural development 3. Various schemes of government for rural development a) IRD Programme b) DPAD Programme	12	

**Reference Books :**

1. Gautam A., 2010, Advance Economic Geography, Sharda Pustak Bhavan, Allahabad
2. Chauhan R. N., 2007, Basic Principles of Economic Geography, ABD Publishers, Jaipur
3. Padey P. N., Economic Geography, Nirali Publication ,Pune
4. Sadhukhan S. K., 1994, Economic Geography An Appraisal of Resources, S Chand &Company Ltd ,New Delhi
5. Roy P., Mukherjee S., 1993, Economic Geography: Resource Appraisal of resources- New Central Book Agency, Calcutta
6. Mannur H. G., 2008, International Economics, Vikas Publishing House Pvt Ltd, Noida
7. Siddharth K., 2003, Economic Geography, Theories, Processes & Patterns, Kisalaya Publications Pvt, Ltd, Noida
8. Husain M., 2008, Geography of India, Tata McGraw Hill, New Delhi
9. Bhat L. S., 1973, Regional Planning in India, Statistical Publishing Society, Kolkata
10. Desai V,1991, Fundamentals of Rural Development, Rawat Publications, New Delhi
11. Paranjape, Gupte, Karmarkar, 1974, Economic & Commercial Geography, Nirali Publication, Pune.
12. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune
13. Pagar S.D., Thorat A. M., More J. C., 2015, Agriculture Geography, Atharav Publication, Pune.

**S.Y.B.A. Geography (S1) Syllabus for Semester III****Name of Subject: Population Geography, Subject Code: Gg.220 (A)****Objectives:**

1. To understand the history of population.
2. To introduction of the basic concepts in Population Geography.
3. To understand the types of Population data.

**Course Outcome:**

1. The history of population changes.
2. The different concepts in population geography.
3. The types and nature of population data.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Introduction	1. Definition, Nature and Scope, 2. Contextual significance of Population Geography, 3. Relation between Population Geography and other social Sciences.	12	03
2	Population Data & Presentation	1. Census of India 2. National Sample Survey, Sample Registration Survey, NFHS, DLHS, 3. Presentation of Population Data – Maps, Graphical Presentation, Computer Application	12	
3	Population Growth and Demographic Attributes	1. Factors affecting Growth of Population 2. Fertility, Mortality - (Concept, Measurement) 3. Migration - Concept, Causes, Types	12	
4	Composition of Population	1. Age-Sex pyramid, Age Structure 2. Occupational Structure, Dependency Ratio 3. Longevity, Life Expectancy. (with Reference to India)	12	

**Reference Books:**

1. Barrett H. R., 1995, Population Geography, Oliver and Boyd Publication,
2. Bhende A. and Kanitkar T., 2000, Principles of Population Studies, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., 1980, An Introduction to Population Geography, Kalyani Publishers.
4. Clarke J. I., 1965, Population Geography, Pergamon Press, Oxford.

5. Jones, H. R., 2000, Population Geography, 3rd ed., Paul Chapman, London.
6. Lutz W., Warren C. S. and Scherbov S., 2004, The End of the World Population Growth in the 21st Century, Earth scan
7. New bold K. B., 2009, Population Geography Tools and Issues, Rowman and Littlefield Publishers.
8. Pacione M., 1986, Population Geography-Progress and Prospect, Taylor and Francis.
9. Wilson M. G. A., 1968, Population Geography, Nelson Publishers.
10. Panda B P , 1988, Population Geography, Granth Academy, Bhopal (Hindi)
11. Maurya S D, 2009, Population Geography, Sharda Putak Bhawan, Allahabad (Hindi)
12. Chandna, R C, 2006, Population Geography, Kalyani Publishers, Delhi. (Hindi)
13. Sawant, Athavale, Musmade, Population Geography, Mehta Publication, Pune. (Marathi)
14. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune (Marathi)
15. Musmade A.H., Sonawane A.E., More J.C., 2015, Population & Settlement Geography, Diamond Publication Pune. (Marathi)

**S.Y.B.A. Geography (S1), Syllabus for Semester IV****Name of Subject: Population Geography, Subject Code: Gg.220 (B)****Objectives:**

1. To introduce students to the Population Policy of India and China.
2. To understand the Health indicator in India.
3. To acquaint students with the concept of urbanization in population geography.
4. To understand population theories.

**Course Outcome:**

1. The population policies in India and China.
2. The health indicators in India.
3. The concept of urbanization in population geography.
4. The different population theories.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Concept and theories of Population	1. Population and space: over Population, Optimum Population, Under Population 2. Malthusian Theory 3. Marxian Theory	12	03
2	Problems of Population and Population Polices	1. Population Problems in India. 2. Population Problems in developed countries 3. Population Policies in India and China	12	
3	Population as a Resources Contemporary Issues	1. Health Indicator in India 2. Population as Social Capital 3. Human Development Index.	12	
4	Urbanization	1. Concept of urbanization 2. History of urbanization in India, Trends of World urbanization. 3. Problems of Urbanization in India	12	

**Reference Books:**

1. Barrett H. R., 1995, Population Geography, Oliver and Boyd Publication,
2. Bhende A. and Kanitkar T., 2000, Principles of Population Studies, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., 1980, An Introduction to Population Geography, Kalyani Publishers.
4. Clarke J. I., 1965, Population Geography, Pergamon Press, Oxford.
5. Jones, H. R., 2000, Population Geography, 3rd ed., Paul Chapman, London.
6. Lutz W., Warren C. S. and Scherbov S., 2004, The End of the World Population Growth in



the 21st Century, Earth scan

7. New bold K. B., 2009, Population Geography Tools and Issues, Rowman and Littlefield Publishers.
8. Pacione M., 1986, Population Geography-Progress and Prospect, Taylor and Francis.
9. Wilson M. G. A., 1968, Population Geography, Nelson Publishers.
10. Panda B P , 1988, Population Geography, Granth Academy, Bhopal (Hindi)
11. Maurya S D, 2009, Population Geography, Sharda Putak Bhawan, Allahabad (Hindi)
12. Chandna, R C, 2006, Population Geography, Kalyani Publishers, Delhi. (Hindi)
13. Sawant, Athavale, Musmade, Population Geography, Mehta Publication, Pune. (Marathi)
14. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune (Marathi)
15. Musmade A.H., Sonawane A.E., More J.C., 2015, Population & Settlement Geography, Diamond Publication Pune. (Marathi)

**S.Y.B.A. Geography (S1), Syllabus for Semester III****Name of Subject: Geography of Maharashtra, Subject Code: Gg.220 (A)****Objectives:**

1. To acquaint students with Geography of our State.
2. To make students aware of the magnitude of problems and prospects in Maharashtra.
3. To help students understand the inter relationship between the subject and the society.
4. To help students understand the recent trends in regional studies

**Course Outcome:**

1. Learn the geography of Maharashtra state.
2. Aware about problems and prospects of Maharashtra.
3. Understand the relationship between geographic variations and society in Maharashtra.
4. Learn the recent trends in regional studies.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Administrative Set up of Maharashtra	1. Historical and Political Background of the state 2. Geographical location of State 3. Adjoining States 4. Administrative Divisions	12	03
2	Physical settings	1. Geological Structure of Maharashtra. 2. Physical Structure (Mountain, plateau, Plains) 3. Drainage Pattern (East and West flowing rivers) 4. Major Soil types and Distribution.	12	
3	Climate	1. Climatic Regions of Maharashtra 2. Distribution of Rainfall 3. Draught prone areas- Problems and Management 4. Flood areas - Problems and Management	12	
4	Resources	1. Water :Problems in Utilization and conservation 2. Forest : Types and Conservation 3. Mineral; Iron ore, Manganese and Bauxite 4. Power : Hydro, Thermal, Atomic	12	

**Reference Book:**

1. Dikshit K.R ., Maharashtra in Maps,
2. Deshpande C. D. , Maharashtra
3. Sadhu Arun, Maharashtra, National Book Trust
4. Savadi A. B., Geography of Maharashtra: Nirali Prakashan, Pune.
5. Dastane S., Maharashtra, Ramchandra and company, Pune
6. Sawadi A. B., The Mega State Series : Nirali Publication, Pune.

7. Maharashtra state Agricultural Atlas
8. Karve I., Maharashtra its Land and people,
9. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune (Marathi)

**S.Y.B.A. Geography (S1), Syllabus for Semester IV****Name of Subject: Geography of Maharashtra, Subject Code: Gg.220****(B) Objective :**

1. To make students aware about the Agriculture problems and prospects of Maharashtra.
2. To understand the population distribution and settlement pattern in Maharashtra.
3. To understand the concept of rural development.
4. To understand the prospectus in Tourism activity in Maharashtra and the role of MTDC and Role of MIDC in industrial development in rural area of Maharashtra

**Course Outcome:**

1. Aware about the problems and prospects of agriculture in Maharashtra.
2. Learn the distribution of population and patterns of settlements in Maharashtra.
3. Learn the concepts in rural development.
4. Understand the prospectus of tourism activities in Maharashtra with role of MTDC in development.
5. Understand the role of MIDC in industrial development in rural Maharashtra.

Sr. No.	Topic	Sub Topic & Learning Point	Hours	Credits
1	Agriculture	<ol style="list-style-type: none"> <li>1. Importance of Agriculture in Economy of Maharashtra</li> <li>2. Major Crops - Wheat, Rice, Jawar, Bajra.</li> <li>3. Cash Crops and Horticulture - Cotton, Sugarcane, Pomegranate, Grapes.</li> <li>4. Problems of agriculture in Maharashtra.</li> </ol>	12	03
2	Population and Settlement	<ol style="list-style-type: none"> <li>1. Population distribution of Maharashtra</li> <li>2. Population composition - Sex Ratio, Literacy, Occupational structure, Migration</li> <li>3. Rural and Urban Settlements</li> <li>4. Potential of Major Cities in Maharashtra – Mumbai, Pune, Nagpur</li> </ol>	12	
3	Rural Development of Maharashtra	<ol style="list-style-type: none"> <li>1. Concept of Rural Development</li> <li>2. Parameters of Rural Development</li> <li>3. Schemes For Rural Development</li> <li>4. Case Studies – Hivare Bazar and Ralegan Siddhi (Ahmednagar), Patoda (Aurangabad)</li> </ol>	12	
4	Tourism	<ol style="list-style-type: none"> <li>1. Growth and development of tourism in Maharashtra</li> <li>2. Tourism Potential of Maharashtra</li> <li>3. Agro-Tourism</li> <li>4. Role of MTDC</li> </ol>	12	

**Reference Book:**

1. Dikshit K.R ., Maharashtra in Maps,
2. Deshpande C. D. , Maharashtra
3. Sadhu Arun, Maharashtra, National Book Trust
4. Savadi A. B., Geography of Maharashtra: NiraliPrakashan, Pune.
5. Dastane S., Maharashtra, Ramchandra and company, Pune
6. Sawadi A. B., The Mega State Series : Nirali Publication, Pune.
7. Maharashtra state Agricultural Atlas
8. Karve I., Maharashtra its Land and people,
9. More J. C., 2014, Geography & Agriculture For MPSC Examination, Atharv Publication, Pune (Marathi)

**S.Y.B.A. Geography (S2), Syllabus for Semester III****Name of the Subject: Scale and Map Projection, subject Code: Gg. 201 (A)****Practical Geography-I No. of Credits: 04**

**Workload:** Six Periods per week per batch consisting of 12 Students; however the last batch needs to have more than six students.

**(Examination for the course will be conducted at the end of the semester)**

**Objectives of Course:**

1. To introduce the basic concepts in Practical Geography
2. To enable students to use various Scales and Projection Techniques in Geography.
3. To acquaint students with the utility of various Projections in Geographical knowledge.
4. To explain the elementary and essential principles of practical work in Geography.

**Course Outcome:**

1. Learn the basic concepts in practical geography.
2. Able to develop and use of survey and mapping skills.
3. Aware of the new techniques, accuracy and map making skills.

**Note:**

1. Use of Map stencils, Log tables, Calculator, computer, Statistical Tables is allowed at the time of Examination.
2. Students must check the practical's regularly and Journal should be certified by practical in-charge and Head of the Department before the examination.
3. Students without a certified journal should not be allowed for the practical examination.
4. Each of the practical batches needs a separate question paper.

Sr. No.	Topic	Sub Topic & Learning Point	No of Practical	Credits
1.	<b>Introduction of Maps</b>	1. Definition of Map 2. Elements of Map 3. Classification of Map: a. On the basis of scale: i) Small scale ii) Large Scale b. On the basis of function: i) Physical ii) Cultural 4. Use of map	<b>03</b>	

2.	<b>Map Scale</b>	<ol style="list-style-type: none"> <li>1. Definition of Map Scale.</li> <li>2. Types of Map Scale               <ol style="list-style-type: none"> <li>a. Verbal Scale</li> <li>b. Numerical Scale</li> <li>c. Graphical Scale</li> </ol> </li> <li>3. Conversion Scale (British and Metric System)               <ol style="list-style-type: none"> <li>a. Verbal scale to Representative fraction</li> <li>b. Representative fraction into Verbal scale</li> </ol> </li> <li>4. Construction of Simple Graphical scale (At least two examples from each)</li> </ol>	<b>06</b>	<b>04</b>	
3.	<b>Basic of map projection</b>	<ol style="list-style-type: none"> <li>1. Definition and types of map projection</li> <li>2. Basic Concepts of Projection: Latitude, Longitude, Parallel of latitude, Meridian of longitude, Prime meridian, Equator, Direction</li> <li>3. Calculation of time basis on meridian and GMT (Calculation of minimum two examples )</li> </ol>	<b>04</b>		
4.	<b>Construction, properties and use of map projections</b>	<ol style="list-style-type: none"> <li>1. Zenithal Projection               <ol style="list-style-type: none"> <li>a. Zenithal Polar Gnomonic Projection</li> </ol> </li> <li>2. Conical Projection               <ol style="list-style-type: none"> <li>a. Conical projection with one standard parallel/Simple conical projection</li> </ol> </li> <li>3. Cylindrical Projection               <ol style="list-style-type: none"> <li>a. Cylindrical equal area projection</li> </ol> </li> <li>4. Mercator projection (At least two examples from each projection)</li> </ol>	<b>07</b>		

**Reference Books:**

1. Sharma J. P., 2010, Prayogic Bhugol, Rastogi Publishers, Meerut.
2. Singh R. L. and Singh R. P. B., 1999, Elements of Practical Geography, Kalyani Publishers.
3. Slocum T. A., McMaster R. B. and Kessler F. C., 2008, Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
4. Tyner J. A., 2010, Principles of Map Design, The Guilford Press.
5. Sarkar A., 2015, Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd., New Delhi
6. Singh R. L. and Dutta P. K., 2012, Prayogatama Bhugol, Central Book Depot, Allahabad
7. Ahirrao Y., Karanjkehele E. K., 2002, Practical Geography, Sudarshan Publication, Nashik
8. Saptarshi P. G., Jog S. R., Statistical Methods ,
9. Karlekar S. N., 2008, Statistical Methods, Diamond Publication, Pune
10. Kanetkar T. P., Kulkarni S. V., 1986, Surveying and Leveling, Pune Vidyarthi Griha Publication, Pune
11. Kumbhare A., Practical Geography,
12. Saha P., Basu P., 2007, Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata

**S.Y.B.A. Geography (S2), Syllabus for Semester IV**

**Name of the Subject: Cartographic Techniques, Surveying and Excursion  
/ Village / Project Report subject Code: Gg. 201 (B)**

**Practical Geography-II No. of Credits: 04**

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**Workload:** Six Periods per week per batch consisting of 12 Students; however the last batch needs to have more than six students.

**(Examination for the course will be conducted at the end of the semester)**

**Objectives of Course:**

1. To introduce the students to the basic and contemporary concepts in Cartography.
2. To acquaint the students with the utility and applications of various Cartographic Techniques.
3. To introduce the latest concepts regarding the modern cartography in the field of Geography.
4. To explain the elementary and essential principles of practical work in Geography.

**Course Outcome:**

1. Learn the basic concepts in practical geography.
2. Able to develop and use of map scale and projections.
3. Aware of the new techniques, accuracy and map making skills.

**Note :**

1. Use of Map stencils, Log tables, Calculators, Statistical Tables is allowed at the time of Examination.
2. Journal completion by the students and the certified by practical in-charge and Head of the Department is compulsory.
3. Students without a certified journal should not be allowed for the practical examination.
4. Each of the practical batches needs a separate question paper.



Sr. No.	Topic	Sub Topic & Learning Point	No of Practical	Credits
1.	<b>Introduction to Cartography</b>	1. Definition of Cartography 2. Development of cartography a. Traditional b. Modern 3. Use of Cartography	02	04
2.	<b>Cartographic techniques</b>	1. Techniques of representation of data (Use and limitations) a. Simple line graph b. Simple bar Graph c. Pie diagram d. Choropleth Map e. Isopleth Method (Isoheight or Isothermal) f. Flow diagram (At least 01 example of each manually and using computer)	06	
3.	<b>Surveying</b>	1. Definition of Surveying 2. Types of North Direction (True, Magnetic and Grid North) 3. Types of Survey (Any three) a. Plane Table Survey : (Radiation Method and Intersection Method) b. GPS Survey and plotting c. Dumpy level / Auto level survey i) Rise and Fall Method ii) Collimation Method d. Demonstration of Total Station 4. Measurement of land: i) Measurement of survey field ii) Example on measurement of area (Circle, Square, Rectangle, Triangle, Uneven shape) iii) Conversion of area (hector into Acer, Square km into square meter, Square meter to Square feet)	08	
4.	<b>Excursion / village/city survey and report writing</b>	Study tour to places of geographical interest anywhere in the country Or Socio- economic survey of village/city	04	

**Reference Books:**

1. Sharma J. P., 2010, Prayogic Bhugol, Rastogi Publishers, Meerut.
2. Singh R. L. and Singh R. P. B., 1999, Elements of Practical Geography, Kalyani Publishers.
3. Slocum T. A., McMaster R. B. and Kessler F. C., 2008, Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
4. Tyner J. A., 2010, Principles of Map Design, The Guilford Press.
5. Sarkar A., 2015, Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd., New Delhi
6. Singh R. L. and Dutta P. K., 2012, Prayogatama Bhugol, Central Book Depot, Allahabad
7. Ahirrao Y., Karanjkehele E. K., 2002, Practical Geography, Sudarshan Publication, Nashik
8. Saptarshi P. G., Jog S. R., Statistical Methods ,
9. Karlekar S. N., 2008, Statistical Methods, Diamond Publication, Pune
10. Kanetkar T. P., Kulkarni S. V., 1986, Surveying and Leveling, Pune Vidyarthi Griha Publication, Pune
11. Kumbhare A., Practical Geography,
12. Saha P., Basu P., 2007, Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata
13. Advanced Practical Geography: 2007, Saha P., Basu P., Books and Allied (P) Ltd, Kolkata

**S.Y.B.A. Geography Syllabus****Name of Subject: Introduction to Geographic Information System****Subject Code: SEC – A, Semester – III****Total Credit:02,****Total Periods: 30****Objectives:**

1. To introduce the students about the basic concepts of GIS.
2. To acquaint the students with the utility and applications of GIS Technique.
3. To create the awareness about Geospatial technology among the students.
4. To inculcate skill of map making among the students by using GIS Technique.

**Course Outcome:**

1. The basic concepts in GIS.
2. The applicability of GIS techniques.
3. The new techniques and skills of map-making with accuracy.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Introduction to GIS	1. Definition of GIS 2. Stages of GIS Development 3. Objectives of GIS 4. Components GIS 5. GIS Applications	06	2
2	Data Types & Models	1. Spatial Data – Concept, Sources; Data Models – Raster & Vector 2. Non-spatial Data – Concept, Sources; Data Models – Relational, Network, Hierarchical & Object-orientated	06	
3	Software based Practical	1. Geo-referencing of Toposheet/Map 2. Digitization of Point, Line & Polygon (at least one layer of each) 3. Data Attachment 4. Creation of Layout and Map	18	

**Course Outcomes:**

On successfully completion of this course, the students will able to -

- Comprehend knowledge about the concepts in GIS.
- Acquire skills of map making using GIS.

**Reference Books:**

- Burrough, P. A. and McDonnell, R. A. (2000): Principles of Geographical Information Systems, Oxford University Press, New York.
- Chang, K. T. (2008): Introduction to Geographic Information Systems, Avenue of the Americas, McGraw-Hill, New York.
- Debashis, C. and Sahoo, R. N. (2015): Fundamentals of Geographic Information System, Viva Books Private Limited.
- DeMers, M. N. (2008): Fundamentals of Geographic Information Systems, John Wiley and Sons, New Delhi.
- Heywood, I., Cornelius, S. and Carver, S. (2011): An Introduction to Geographical Information Systems, Pearson Education, New Delhi.
- Karlekar, S. (2007): Bhaugolik Mahiti Pranali (GIS), Diamond Publications, Pune.

- Korte, G. B. (2001): The GIS Book, Onward Press, Bangalore.
- Longley, P. A., Goodchild, M. F., Maguire, D. J. and Rhind, D. W. (2002): Geographical Information Systems and Science, John Wiley & Sons, Chichester.
- Lo Albert, C. P., Yeung and Albert K. W. (2002): Concepts and Techniques of Geographical Information Systems, Prentice Hall of India, New Delhi.
- Pandey, J. and Pathak D. (2015): Geographic Information System, TERI Press, The Energy and Resources Institute, New Delhi.
- Paul, A. L., Michel, F. G., Maguire, D. J. and Rhind, D.W. (2002): Introduction to Geographic Information Systems and Science, John Wiley and Sons Ltd.

**S.Y.B.A. Geography Syllabus****Name of Subject: APPLIED COURSE OF DISASTER MANAGEMENT****Subject Code: SEC – A Semester - III****Total Credit:02,****Total Periods: 30****Objectives:**

The objectives of the course are to develop following Skills among the students

- 1.To introduce basic concepts and fundamental structure of Disaster Management (DM).
- 2.To inculcate critical thinking and problem-solving abilities on disaster management.
- 3.To enable students to assess the situation and design plan for Disaster management

**Course Outcome:**

1. The basic concepts and fundamentals in disaster management.
2. The problem solving abilities on disaster management.
3. To assess the situation and design plan for disaster management.

Unit no.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Fundamental Concepts, Measurement / Parameter and Types of Disasters	a) Disaster, Hazard, Risk, Vulnerability, Resilient b) Magnitude, Intensity, Frequency, Duration, Spatial dispersion	06	02
2	Phases of Disaster Management Role of Geographers and organizations	a) Concept: Mitigation, Preparedness, Response, Recovery, Rehabilitation. b) Role of Geographers	08	
3	Comparative Assessment of Disaster Management- I	a) Earthquake: - India and Japan b) Flood:- India and Netherland	08	
4	Assessment of Disaster Management- II	Assignment based on Primary or secondary data on any one Geographical scale- local/ regional/national/ global	08	

1. Disaster Management Guidelines, GOI-UND Disaster Risk Program (2009-2012)
2. Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth Heineman.
3. Gupta A.K., Niar S.S and Chatterjee S. (2013) Disaster management and Risk Reduction, Role of Environmental Knowledge, Narosa Publishing House, Delhi.
4. Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.

5. Modh S. (2010) Managing Natural Disasters, Mac Millan publishers India LTD.
6. Dr. Mrinalini Pandey (2017) Disaster Management, Wiley India Pvt. Ltd.
7. Tushar Bhattacharya (2018) Disaster Science and Management, McGraw Hill Education (India) Pvt. Ltd.
9. Arjun Musmade, Jyotiram More (2014) Geography of Disaster Management, Diamond Publication, Pune. (Marathi)
10. P. P. Marathe (2010), Disaster Management Concepts & Practices Diamond Publication, Pune. (Marathi)

**S.Y.B.A. Geography Syllabus****Name of Subject: Introduction to Remote Sensing****Subject Code: SEC-B Semester – IV****Total Credit:02,****Total Periods: 30****Objectives:**

1. To introduce the students about the basic concepts of Remote Sensing.
2. To acquaint the students with the utility of RS and its applications.
3. To inculcate the skill of satellite image interpretation among the students.

**Course Outcome:**

1. The basic concepts and fundamentals in remote sensing.
2. The applicability of remote sensing techniques.
3. The skills of satellite image interpretation and map-making.

Sr. No.	Topic	Sub Topics	Teaching Hours	Total Credits
1	Introduction to Remote Sensing	1. Concept, Definition and Types of RS 2. Development of RS in India 3. Stages in RS 4. Electromagnetic Spectrum 5. Applications of RS	07	2
2	Image Interpretation	1. Elements of Visual Image Interpretation 2. Visual Image Interpretation of Satellite Images i.e. IRS or LANDSAT	07	
3	Software based Practical	1. Image Downloading through Bhuvan/USGS 2. Layer Stacking 3. Image Enhancement 4. Image Classification - Unsupervised	16	

**Reference Books:**

- Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad.
- Bhatta B., (2011): Remote Sensing and GIS, Oxford University Press, India.
- Campbell, J. (2002): Introduction to Remote Sensing, Taylor & Francis, London.
- Gupta, R.P. (1990): Remote Sensing Geology. Springer Verlag.
- Heywood, I., Steve, C. and Cornelius, S. (2003): An Introduction to Geographical Information Systems, Pearson Education.
- Jensen, J. R. (2000): Remote Sensing of the Environment: An Earth resource Perspective, Prentice Hall.
- Jensen, J. R. (2005): Introductory Digital Image Processing, Prentice Hall, New Jersey.
- Karlekar, S. (2006): Doorsamvedan - Remote Sensing (Marathi), Diamond Publications, Pune.
- Karlekar, S. (2017): Dursamvedan Aani Bhougolik Mahiti Pranali (Marathi), Diamond Publications, Pune.
- Lillesand, T. M., Kiefer, R. W. and Chipman, J. W. (2016): Remote Sensing and Image Interpretation, 6<sup>th</sup> Edition, Wiley India.
- Rao R. M. (2002): Geographical Information Systems, Rawat Publication.
- Sabins, F. F. (1996): Remote Sensing: Principles and Interpretation, W.H. Freeman and Company, San Francisco.

**S.Y.B.A. Geography Syllabus**Name of Subject: **APPLIED COURSE OF Travel & Tourism**Subject Code: **SEC – B Semester -IV****Total Credit:02,****Total Periods: 30**

1. To develop basic framework to understand the various elements of tourism management.
2. To evaluate the role of transport in travel and tourism industry.
3. To develop the skills to arrange, manage and implement various types of tours.

**Skills to be developed:**

1. Students will be able to perform online as well as offline booking and cancellation procedures for different available modes of travel and tourism.
2. Students will be able to acquire earning skills in tourism industry.

**Course Outcome:**

1. Perform online as well as offline booking and cancellation procedures for different available modes of travel and tourism.
2. Acquire earning skills in tourism industry.

<b>Introduction to Tourism</b>			
<b>Unit No.</b>	<b>Topic</b>	<b>Learning Point</b>	<b>Periods</b>
<b>1</b>	Introduction to Travel and Tourism	1.1 Basic concepts: Travel & Tourism 1.2 Types of Tourist and Tourism 1.3 Types of transportation	<b>05</b>
<b>2</b>	Local Tourism	2.1 Concept and need of local tourism 2.2 Introduction to local tourist places	<b>05</b>
<b>3</b>	Tour planning and Skill development	3.1 Basic skills: Communication, Time Management, Computer operating, online booking, Net banking, Cancellation of booking and ticket, etc. 3.2 Framing the tour plan (Itinerary): Budget (Costing), Duration, Insurance, Route and other requirements for individual, family, group and mass level tours 3.3 Promotion of tourism	<b>10</b>
<b>4</b>	Project work and Visit to tourist place	4.1 One short tour (Not more than two days duration) and Preparation of tour report.	<b>10</b>

**Text Books:**

1. Bhatia. Tourism Development (New Delhi, Sterling)
2. Seth: Tourism Management (New Delhi, Sterling)
3. Kaul: Dynamics of Tourism (New Delhi, Sterling)
4. Mill and Morrison – The Tourism system an Introductory Text (1992) Prentice Hall
5. Cooper, Fletcher, Tourism, Principles and practices (1993) Pitman
6. Burkart and Medlik Tourism, Past, Present and Future (1981) Heinemann, ELBS.
7. P.S. Gill, Dynamics of Tourism (4 Vols) Anmol Publication.
8. P.C. Sinha, Tourism Management. Anmol Publication.



**References:**

1. Travel Industry : Chunky Gee et-al
2. Tourism Systems - Mill and Morisson
3. Tourism Management Vol - 4 - P.C. Sinha
4. Tourism Development - R. Gartner
5. Studies in Tourism - Sagar Singh
6. Tourism: Principles and Practices - Cooper C., Fletcher J., Gilbert D and Wanhil.
7. Tourism: Principles and Practices - McIntosh , R.W.
8. Tourism : Past, Present and Future - Burkart & Medli

**University of Pune**  
**Board of Studies in Mathematics**  
**S. Y. B. Sc. (Computer Science)**  
**Syllabus of Mathematics**

**Introduction:**

Savitribai Phule Pune University, Pune has decided to change the syllabi of various faculties from June, 2020. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects Board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to Savitribai Phule Pune University, Pune has prepared the syllabus of S.Y.B.Sc. Computer Science Mathematics. To develop the syllabus the U.G.C. Model curriculum is followed.

**Aims:**

- i) Give the students a sufficient knowledge of fundamental principles ,methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling ,solving and interpreting.
- ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
- iii) Enhancing students overall development and to equip them with mathematical modeling abilities, problem solving skills , creative talent and power of communication necessary for various kinds of employment .
- iv) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

**Objectives:**

- (i) A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
- (ii) A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
- (iii) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

(iv) A student be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

(v) A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture.

\* **Medium of Instruction:** English

\* **Eligibility:** F.Y.B.Sc. Computer Science, as per University rules.

**Structure of the course:**

Semester - I			Semester -II	
Paper I	MTC-231	Groups and Coding Theory	MTC-241	Computational Geometry
Paper II	MTC-232	Numerical Techniques	MTC-242	Operations Research
Paper III	MTC-233	Mathematics Practical: Python Programming Language-I	MTC-243	Mathematics Practical: Python Programming Language-II

\* All three above courses are compulsory.

\* **External Students:** Not allowed.

\* **Variation / Revaluation:** Allowed for Paper- I and Paper-II.

\* **Qualifications for Teacher:** M.Sc. Mathematics (with NET /SET as per existing rules )

**Equivalence of Previous syllabus along with new syllabus:**

	Semester-III		Semester-IV	
	New Course	Old Course	New Course	Old Course
Paper I	MTC-231: Groups and Coding Theory	MTC-211 : Applied Algebra	MTC-241: Computational Geometry	MTC-221: Computational Geometry
Paper II	MTC-232: Numerical Techniques	MTC-212: Numerical Analysis	MTC-242: Operations Research	MTC-222: Operations Research

<b>Paper III</b>	<b>MTC-233: Mathematics Practical: Python Programming Language-I</b>	<b>MTC-213 : Mathematics Practical</b>	<b>MTC-243: Mathematics Practical: Python Programming Language-II</b>	<b>MTC-223: Mathematics Practical</b>
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**Semester III**

**MTC-231 : Groups and Coding Theory**

**Unit 1. Integers**

**[05 Lectures]**

- 1.1 Division Algorithm (without Proof)
- 1.2 G.C.D. using division algorithm and expressing it as linear combination
- 1.3 Euclid's lemma
- 1.4 Equivalence relation (revision), Congruence relation on set of integers, Equivalence class partition

**Unit 2. Groups**

**[03 Lectures]**

- 2.1 Binary Operation
- 2.2 Group: Definition and Examples
- 2.3 Elementary Properties of Groups

**Unit 3. Finite Groups and Subgroups**

**[10 Lectures]**

- 3.1 Order of a group, order of an element
- 3.2 Examples  $(\mathbb{Z}_n, +)$  and  $(U(n), *)$
- 3.3 Subgroup definition, Finite subgroup test, subgroups of  $\mathbb{Z}_n$
- 3.4 Generator, cyclic group, finding generators of  $\mathbb{Z}_n$  (Corollary 3,4 without proof)
- 3.5 Permutation group, definition, composition of two permutations, representation as product of disjoint cycles, inverse and order of a permutation, even/ odd permutation
- 3.6 Cosets: Definition, Examples and Properties, Lagrange Theorem (without Proof)

**Unit 4. Groups and Coding Theory**

**[18 Lectures]**

- 4.1 Coding of Binary Information and Error detection
- 4.2 Decoding and Error Correction
- 4.3 Public Key Cryptography

**Text Books:-**

1. **Contemporary Abstract Algebra By J. A, Gallian (Seventh Edition)**  
Unit 1: Chapter 0, Unit 2: Chapter 2, Unit 3: Chapter 3 ,4, 5 and 7
2. **Discrete Mathematical Structures By Bernard Kolman, Robert C. Busby and Sharon Ross (6<sup>th</sup> Edition) Pearson Education Publication**  
Unit 4: Chapter 11

**MTC-232 : Numerical Techniques**

**Unit 1: Algebraic and Transcendental Equation**

**[04 Lectures]**

- 1.1 Introduction to Errors
- 1.2 False Position Method
- 1.3 Newton-Raphson Method

**Unit 2: Calculus of Finite Differences and Interpolation**

**[16 Lectures]**

- 2.1 Differences
- 2.2. Forward Differences
- 2.3 Backward Differences
- 2.4 Central Differences
- 2.5 Other Differences ( $\delta$ ,  $\mu$  operators)
- 2.6 Properties of Operators
- 2.7 Relation between Operators
- 2.8 Newton's Gregory Formula for Forward Interpolation
- 2.9 Newton's Gregory Formula for Backward Interpolation
- 2.10 Lagrange's Interpolation Formula
- 2.11 Divided Difference
- 2.12 Newton's Divided Difference Formula

**Unit 3: Numerical Integration**

**[08 Lectures]**

- 3.1 General Quadrature Formula
- 3.2 Trapezoidal Rule
- 3.3 Simpson's one-Third Rule
- 3.4 Simpson's Three-Eight Rule

**Unit 4: Numerical Solution of Ordinary Differential Equation**

**[08 Lectures]**

- 4.1 Euler's Method
- 4.2 Euler's Modified Method
- 4.3 Runge-Kutta Methods

## **Text Book:-**

### **1. A textbook of Computer Based Numerical and Statistical Techniques, by A. K.**

**Jaiswal and Anju Khandelwal. New Age International Publishers.**

**Unit 1:** Chapter 2: Sec. 2.1, 2.5, 2.7

**Unit 2:** Chapter 3: Sec. 3.1, 3.2, 3.4, 3.5, Chapter 4: Sec. 4.1, 4.2, 4.3,  
Chapter 5: Sec. 5.1, 5.2, 5.4, 5.5

**Unit 3:** Chapter 6: Sec. 6.1, 6.3, 6.4, 6.5, 6.6, 6.7

**Unit 4:** Chapter 7: Sec. 7.1, 7.4, 7.5, 7.6

## **Reference Books:-**

1. S.S. Sastry; Introductory Methods of Numerical Analysis, 3rd edition, Prentice Hall of India, 1999.
2. H.C. Saxena; Finite differences and Numerical Analysis, S. Chand and Company.
3. K.E. Atkinson; An Introduction to Numerical Analysis, Wiley Publications.
4. Balguruswamy; Numerical Analysis.

## **MTC-233: Mathematics Practical: Python Programming Language-I**

### **Unit 1: Introduction to Python**

1.1 Installation of Python

1.2 Values and types: int, float and str,

1.3 Variables: assignment statements, printing variable values, types of variables.

1.4 Operators, operands and precedence: +, -, /, \*, \*\*, % PEMDAS(Rules of precedence)

1.5 String operations: + : Concatenation, \* : Repetition

1.6 Boolean operator:

1.6.1 Comparison operators: ==, !=, >, =, <=

1.6.2 Logical operators: and, or, not

1.7 Mathematical functions from math, cmath modules.

1.8 Keyboard input: input() statement

### **Unit 2: String, list, tuple**

2.1 Strings:

2.1.1 Length (Len function)

2.1.2 String traversal: Using while statement, Using for statement

2.1.3 String slice

2.1.4 Comparison operators (>, <, ==)

2.2 Lists:

2.2.1 List operations

2.2.2 Use of range function

2.2.3 Accessing list elements

2.2.4 List membership and for loop

2.2.5 List operations

2.2.6 Updating list: addition, removal or updating of elements of a list

## 2.3 Tuples:

- 2.3.1 Defining a tuple,
- 2.3.2 Index operator,
- 2.3.3 Slice operator,
- 2.3.4 Tuple assignment,
- 2.3.5 Tuple as a return value

## **Unit 3: Iterations and Conditional statements**

- 3.1 Conditional and alternative statements, Chained and Nested Conditionals: if, if-else, if-elif-else, nested if, nested if-else
- 3.2 Looping statements such as while, for etc, Tables using while.
- 3.3 Functions:
  - 3.3.1 Calling functions: type, id
  - 3.3.2 Type conversion: int, float, str
  - 3.3.3 Composition of functions
  - 3.3.4 User defined functions, Parameters and arguments

## **Unit 4: Linear Algebra**

- 4.1 Matrix construct, eye(n), zeros(n,m) matrices
- 4.2 Addition, Subtraction, Multiplication of matrices, powers and invers of a matrix.
- 4.3 Accessing Rows and Columns, Deleting and Inserting Rows and Columns
- 4.4 Determinant, reduced row echelon form, nullspace, column space, Rank
- 4.5 Solving systems of linear equations (Gauss Elimination Method, Gauss Jordan Method, LU- decomposition Method)
- 4.6 Eigenvalues, Eigenvectors, and Diagonalization

## **Unit 5: Numerical methods in Python**

- 5.1 Roots of Equations
- 5.2 Newton-Raphson Method
- 5.3 False Position (Regula Falsi) Method
- 5.4 Numerical Integration:
  - 5.1.1 Trapezoidal Rule,
  - 5.1.2 Simpson's 1/3<sup>rd</sup> Rule,
  - 5.1.3 Simpson's 3/8<sup>th</sup> Rule

## **Text Books:-**

1. Downey, A. et al., **How to think like a Computer Scientist: Learning with Python, John Wiley, 2015.**  
Sections: 1, 2, 3
2. Robert Johansson, **Introduction to Scientific Computing in Python**  
Section: 4

## **Reference Books:-**

1. Lambert K. A., **Fundamentals of Python - First Programs, Cengage Learning India, 2015.**
2. Guzdial, M. J., **Introduction to Computing and Programming in Python, Pearson**

**India.**

- 3. Perkovic, L., Introduction to Computing Using Python, 2/e, John Wiley, 2015.**
- 4. Zelle, J., Python Programming: An Introduction to Computer Science, Franklin, Beedle & Associates Inc.**
- 5. Sandro Tosi, Matplotlib for Python Developers, Packt Publishing Ltd.(2009)**

**Practicals:**

**Practical 1:** Introduction to Python, Python Data Types-I (Unit 1)

**Practical 2:** Python Data Types- II (Unit 2)

**Practical 3:** Control statements in Python-I (Unit 3- 3.1, 3.2)

**Practical 4:** Control statements in Python-II (Unit 3- 3.3)

**Practical 5:** Application : Matrices (Unit 4 – 4.1-4.3)

**Practical 6:** Application : Determinants, system of Linear Equations (Unit 4- 4.4, 4.5)

**Practical 7:** Application : System of equations (Unit 4- 4.5)

**Practical 8:** Application : Eigenvalues, Eigenvectors (Unit 4 – 4.6)

**Practical 9:** Application : Eigenvalues, Eigenvectors (Unit 4 – 4.6)

**Practical 10:** Application : Roots of equations (Unit 5 – 5.1)

**Practical 11:** Application : Numerical integration (Unit 5 – 5.2, 5.3)

**Practical 12:** Application : Numerical integration (Unit 5 – 5.4)

**Semester - IV**

**MTC-241: Computational Geometry**

**Unit 1. Two dimensional transformations:**

**[12 Lectures]**

- 1.1 Introduction.
- 1.2 Representation of points.
- 1.3 Transformations and matrices.
- 1.4 Transformation of points.
- 1.5 Transformation of straight lines
- 1.6 Midpoint Transformation
- 1.7 Transformation of parallel lines
- 1.8 Transformation of intersecting lines
- 1.5 Transformation: rotations, reflections, scaling, shearing.
- 1.6 Combined transformations.
- 1.7 Transformation of a unit square.
- 1.8 Solid body transformations.
- 1.9 Translations and homogeneous coordinates.
- 1.10 Rotation about an arbitrary point.
- 1.11 Reflection through an arbitrary line.

**Unit 2. Three dimensional transformations:**

**[08 Lectures]**

- 2.1 Introduction.
- 2.2 Three dimensional – Scaling, shearing, rotation, reflection, translation.
- 2.3 Multiple transformations.
- 2.4 Rotation about – an axis parallel to coordinate axes, an arbitrary line
- 2.5 Reflection through – coordinate planes, planes parallel to coordinate planes , an arbitrary plane



**Unit 3. Projection** [08 Lectures]

- 3.1 Orthographic projections.
- 3.2 Axonometric projections.
- 3.3 Oblique projections
- 3.4 Single point perspective projection

**Unit 4. Plane and space Curves:** [08 Lectures ]

- 4.1 Introduction.
- 4.2 Curve representation.
- 4.3 Parametric curves.
- 4.4 Parametric representation of a circle and generation of circle.
- 4.5 Bezier Curves – Introduction, definition, properties (without proof), Curve fitting (up to  $n = 3$ ), equation of the curve in matrix form (upto  $n = 3$ )

**Textbook:**

**1. D. F. Rogers, J. A. Adams, Mathematical elements for Computer graphics, Mc Graw Hill Intl Edition.**

Unit 1: Chapter 2: Sec. 2-1 to 2.17

Unit 2: Chapter 3: Sec. 3.1 to 3.10,

Unit 3: Chapter 3: Sec. 3.12 to 3.14

Unit 4: Chapter 4: Sec. 4.1, 4.2, 4.5, Chapter 5: Sec. 5.1, 5.8

**Reference books:**

1. Computer Graphics with OpenGL, Donald Hearn, M. Pauline Baker, Warren Carithers, Pearson (4<sup>th</sup> Edition)
2. Schaum Series, Computer Graphics.

**MTC-242: Operations Research**

**Unit 1: Linear Programming Problem I** [12 Lectures]

- 1.1 Introduction Definition and Examples
- 1.2 Problem solving using Graphical method
- 1.3 Theory of Linear Programming, Slack and surplus variables, Standard form of LPP, Some important definitions, Assumptions in LPP, Limitations of Linear programming, Applications of Linear programming, Advantages of Linear programming Techniques
- 1.4 Simplex method, Big- M-method

**Unit 2: Linear Programming Problem II** [08 Lectures]

- 2.1 Special cases of LPP : Alternative solution, Unbounded solution, Infeasible solution
- 2.2 Duality in Linear Programming, Primal to dual conversion, Examples

**Unit 3: Assignment Models** [06 Lectures ]

- 3.1 Assignment Model -Introduction
- 3.2 Hungarian method for Assignment problem

**Unit 4: Transportation Models** [10 Lectures]

- 4.1 Introduction, Tabular representation

- 4.2 Methods of IBFS (North-West rule, Matrix-minima, Vogel's Approximation), Algorithms
- 4.3 The Optimality Test of Transportation Model (MODI method only)

**Text Book:-**

**Operation Research (12<sup>th</sup> Edition), by S.D.Sharma.**

- Unit 1: Chapter 1: Sec. 1.1, 1.3-1, 1.3-2, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 1.12,  
Chapter 3: Sec. 3.1, 3.2, 3.3, 3.4, 3.5-4,
- Unit 2: Chapter 3: Sec. 3.8-1,3.8-2, Chapter 5: Sec. 5.1-1, 5.2-1,5.3,5.7-1, 5.7-2
- Unit 3: Chapter 9: Sec. 9.1, 9.2, 9.4-1, 9.4-2, 9.5, 9.6, 9.7-1, 9.7-2
- Unit 4: Chapter 10: 10.1, 10.2, 10.5, 10.8-1,10.9, 10.10

**Reference Books:-**

1. Operations Research by H. A. Taha
2. Operations Research by R. Panneerselvam, Prentice Hall of India.
3. Principles of Operations Research by H. M. Wagner, Prentice Hall of India.
4. Operations Research by Gupta and Hira.
5. Operation Research by J.K. Sharma

**MTC-243: Mathematics Practical: Python Programming Language-II**

**Unit 1: 2D, 3D Graphs**

- 1.1 Installation of numpy, matplotlib packages
- 1.2 Graphs plotting of functions such as ... etc.
- 1.3 Different formats of graphs.
- 1.3 Three-dimensional Points and Lines
- 1.4 Three-dimensional Contour Plots
- 1.5 Wireframes and Surface Plots
- 1.6 Graphs plotting of functions such as... etc.

**Unit 2: Computational Geometry**

- 1.1 Points: The distance between two points, Lists of Points - the PointList class, Integer point lists, Ordered Point sets, Extreme Points of a PointList, Random sets of Points not in general position
- 2.2 Points: Displaying Points and other geometrical objects, Lines, rays, and line segments, The geometry of line segments, Displaying lines, rays and line segments
- 2.3 Polygon :** Representing polygons in Python, Triangles, Signed area of a triangle, Triangles and the relationships of points to lines, is Collinear, is Left, is Left On, is Right, is Right On, Between
- 2.4 Two dimensional rotation and reflection**
- 2.5 Three dimensional rotation and reflection**
- 2.6 Generation of Bezier curve with given control points

**Unit 3: Study of Operational Research in Python**

- 3.1 Linear Programming in Python
- 3.2 Introduction to Simplex Method in Python

**Practicals:**

- Practical 1:** Graph Plotting (Unit 1 – 1.1 – 1.3)
- Practical 2:** Graph Plotting (Unit 1 – 1.4 – 1.7)
- Practical 3:** Application to Computational Geometry (Unit 2 – 2.1)
- Practical 4:** Application to Computational Geometry (Unit 2 – 2.2)
- Practical 5:** Application to Computational Geometry (Unit 2 – 2.3)
- Practical 6:** Study of Graphical aspects of Two dimensional transformation matrix using matplotlib
- Practical 7:** Study of Graphical aspects of Three dimensional transformation matrix using matplotlib
- Practical 8:** Study of Graphical aspects of Three dimensional transformation matrix using matplotlib
- Practical 9:** Study of effect of concatenation of Two dimensional and Three dimensional transformations
- Practical 10:** Generation of Bezier curve using given control points
- Practical 11:** Study of Operational Research in Python (Unit 3.1)
- Practical 12:** Study of Operational Research in Python (Unit 3.2)

**Text Books:-**

1. Jaan Kiusalaas, **Numerical Methods in Engineering with Python**, Cambridge University Press, (2005)  
Sections: 3
2. Robert Johansson, **Introduction to Scientific Computing in Python**  
Section: 1
3. Jason Brownlee, **Basics of Linear Algebra for Machine Learning, Discover the Mathematical Language of Data in Python**  
Sections: 2

**Reference Books:-**

1. Lambert K. A., **Fundamentals of Python - First Programs**, Cengage Learning India, 2015.
2. Guzdial, M. J., **Introduction to Computing and Programming in Python**, Pearson India.
3. Perkovic, L., **Introduction to Computing Using Python**, 2/e, John Wiley, 2015.
4. Zelle, J., **Python Programming: An Introduction to Computer Science**, Franklin, Beedle and Associates Inc.
5. Jim Arlow, **Interactive Computational Geometry in Python**

**Note:**

- (i) In paper -I , paper-II and paper-III, each course is of 50 marks ( 35 marks theory and 15 marks internal examination).
- (ii) Paper III: Mathematics Practical - MTC-233 and MTC-243 is practical course and

is of 50 marks. Practicals shall be performed on computer.

**Examination:**

**A) Pattern of examination: Paper- I, Paper-II and paper-III: Semesterwise**

**B) Pattern of question papers: For Paper -I and Paper-II**

**Q 1. Attempt any 05 out of 07 questions each of 01 marks. [05 Marks]**

**Q 2. Attempt any 02 out of 04 questions each of 05 marks. [10 Marks]**

**Q 3. Attempt any 02 out of 04 questions each of 05 marks. [10 Marks]**

**Q 4. Attempt any 02 out of 04 questions each of 10 marks. [10 Marks]**

**C) Instructions Regarding Practical:**

**Paper-III:Mathematics Practical:**

**(i) Mathematics Practical, external examiner shall be appointed by Savitribai Phule Pune University, Pune.**

**(ii) The minimum duration of practical examination is 3 hours.**

**(iii) The semester examination is of 35 marks 15 marks are from internal evaluation (Journal, attendance and viva-voce or internal test etc.)**

**(iv) The slips for the questions on programming and problem solving using python shall be prepared and provided and these can be used at least for 3 years.**

**D) Standard of passing:**

**For Paper- I, Paper-II and Paper -III: 14 Marks out of 35 and 06 marks out of 15 marks and total should be 20 marks for each course.**



## सावित्रीबाई फुले पुणे विद्यापीठ, पुणे

मराठी विषयाचा पुनर्रचित अभ्यासक्रम- जून २०२० पासून

द्वितीय वर्ष कला (S. Y. B. A.) मराठी

निवड आधारित श्रेयांक पद्धत

Choice Based Credit System [CBCS]

सत्र	विषयाचे नाव	संकेतांक	पूर्वीचे नाव
पहिले	भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : कादंबरी	[CC - 1 C (3)]	नियमित अभ्यासक्रम G2
दुसरे	भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : ललितगद्य	[CC - 1 D (3)]	
पहिले	व्यावहारिक व उपयोजित मराठी - भाग ३	[CC - 1 C (3)]	पर्यायी अभ्यासक्रम G2
दुसरे	व्यावहारिक व उपयोजित मराठी - भाग ४	[CC - 1 D (3)]	
पहिले	आधुनिक मराठी साहित्य : प्रकाशवाटा	[DSE 1 A (3)]	S1
दुसरे	मध्ययुगीन मराठी साहित्य : निवडक मध्ययुगीन गद्य, पद्य	[DSE 1 B (3)]	
पहिले	साहित्यविचार	[DSE 2 A (3)]	S2
दुसरे	साहित्य समीक्षा	[DSE 2 B (3)]	
पहिले	प्रकाशनव्यवहार आणि संपादन	SEC 2 A (2)	DSE विषयांशी निगडित अनिवार्य
दुसरे	उपयोजित लेखनकौशल्ये	SEC 2 B (2)	

## द्वितीय वर्ष कला (S. Y. B. A.)

नियमित अभ्यासक्रम

पहिले सत्र

विषयाचे नाव

भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : कादंबरी [CC – 1 C (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. कादंबरी या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल समजून घेणे.
२. नेमेलेल्या कादंबरीचे आकलन, आस्वाद आणि विश्लेषण करणे.
३. भाषिक कौशल्यविकास करणे.

घटक		तपशील	श्रेयांक	तासिका
१	अ	१ संगणक आणि मोबाईलवर युनिकोडमधून मराठी मुद्रण. २ कळफलक प्रकार : इनस्क्रिप्ट, फोनेटिक ३ मराठी टंकलेखन आणि युनिकोडचा वापर : गुगल इनपुट, मायक्रोसॉफ्ट इनपुट व इतर साधने	१	१५
	ब	१ कादंबरी : स्वरूप आणि घटक २ कादंबरी : प्रकार आणि वाटचाल		
२		अभ्यासपुस्तक रारंग ढांग – प्रभाकर पेंढारकर मौज प्रकाशन गृह, मुंबई	२	३०

संदर्भ ग्रंथ :

१. साहित्य अध्यापन आणि प्रकार, संपादक श्री. पु. भागवत आणि इतर.
२. आधुनिक मराठी वाङ्मयाचा इतिहास, खंड ४, ५, ६, संपादक रा. श्री. जोग.
३. आधुनिक मराठी वाङ्मयाचा इतिहास, अ. ना. देशपांडे
४. मराठी कादंबरी : समाजशास्त्रीय समीक्षा, डॉ. रवींद्र ठाकूर
५. मराठी कादंबरीतील प्रादेशिकता, डॉ. भास्कर शेळके
६. मराठी ग्रामीण कादंबरी, डॉ. रवींद्र ठाकूर
७. मराठी कादंबरीचे पहिले शतक, कुसुमावती देशपांडे
८. कादंबरी आणि मराठी कादंबरी, उषा हस्तक
९. मराठी कादंबरी आस्वादयात्रा, संपादक विजया राजाध्यक्ष
१०. मराठी कादंबरी : तंत्र आणि विकास, प्रा. वा. बापट, ना. वा. गोडबोले
११. मराठी प्रादेशिक कादंबरी : तंत्र आणि स्वरूप, डॉ. मदन कुलकर्णी
१२. मराठी कादंबरी : चिंतन आणि समीक्षा, डॉ. चंद्रकांत बांदिवडेकर
१३. कादंबरी : सार आणि विस्तार, डॉ. महेंद्र कदम

१४. कादंबरीविषयी, हरिश्चंद्र थोरात
१५. मराठी कादंबरी : परंपरा आणि चिकित्सा, राजेंद्र सलालकर
१६. मराठी कादंबरी आशय आणि आविष्कार, दत्ता घोलप
१७. सायबर संस्कृती, डॉ. रमेश वरखेडे
१८. उपयोजित मराठी, संपादक डॉ. केतकी मोडक, संतोष शेणई, सुजाता शेणई
१९. ओळख माहिती तंत्रज्ञानाची, टिमोथी जे. ओ लिअरी
२०. <https://play.google.com/store/apps/details?id=org.mkcl.solar.itmarathi&hl>
२१. <http://www.youtube.com/watch?v=oXAWMH5PDxY>

दुसरे सत्र  
विषयाचे नाव

भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : ललितगद्य [CC – 1 D (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. ललितगद्य या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल समजून घेणे.
२. नेमलेल्या अभ्यासपुस्तकातील ललितगद्याचे आकलन, आस्वाद आणि विश्लेषण करणे.
३. भाषिक कौशल्यविकास करणे.

घटक		तपशील	श्रेयांक	तासिका
१	अ	गुगल साधनांचा अध्ययनातील वापर : गुगल फॉर्म, गुगल क्लासरूम, यु ट्यूब.	१	१५
	ब	१ ललितगद्य : स्वरूप आणि घटक २ ललितगद्य : प्रकार आणि वाटचाल		
२		अभ्यासपुस्तक साहित्यरंग संपादक प्रा. डॉ. शिरीष लांडगे, प्रा. डॉ. दिलीप पवार, प्रा. डॉ. जया कदम अक्षर वाङ्मय प्रकाशन, पुणे	२	३०

संदर्भ ग्रंथ :

१. लघुनिबंध ते मुक्तछंद, वि. शं. चौगुले
२. ग्रंथ संवाद, वि. शं. चौगुले
३. मराठी लघुनिबंधाचा इतिहास, डॉ. आनंद यादव
४. निबंध : शास्त्र व कला, डॉ. प्र. न. जोशी
५. मराठी निबंध, प्रा. म. वि. फाटक
६. प्रतिभा साधन, ना. सी. फडके
७. प्रदक्षिणा खंड १ आणि २
८. आधुनिक मराठी वाङ्मयाचा इतिहास, म.सा.प.,पुणे.
९. मराठी प्रवासवर्णनाची वाटचाल, नीला पांढरे
१०. प्रवासवर्णन, वसंत सावंत
११. सायबर संस्कृती, डॉ. रमेश वरखेडे
१२. उपयोजित मराठी, संपादक डॉ. केतकी मोडक, संतोष शेणई, सुजाता शेणई
१३. ओळख माहिती तंत्रज्ञानाची, टिमोथी जे. ओ लिअरी
१४. <https://play.google.com/store/apps/details?id=org.mkcl.solar.itmarathi&hl>
१५. <http://www.youtube.com/watch?v=oXAWMH5PDxY>



## प्रश्नपत्रिकेचे स्वरूप

- भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : कादंबरी [CC – 1 C (3)] (सत्र १)
- भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार : ललितगद्य [CC – 1 D (3)] (सत्र २)

विद्यापीठ सत्र परीक्षा		
वेळ : ३ तास	घटकनिहाय प्रश्न तपशील	गुण : ७०
प्रश्न क्रमांक		गुण
प्रश्न १ ला	५ पैकी ३ प्रश्नांची उत्तरे प्रत्येकी ५० शब्दांपर्यंत लिहा. (घटक १ व २)	१५
प्रश्न २ रा	३ पैकी २ प्रश्नांची उत्तरे प्रत्येकी १५० शब्दांपर्यंत लिहा. (घटक १)	२०
प्रश्न ३ रा	३ पैकी २ उपप्रश्नांची उत्तरे प्रत्येकी २०० शब्दांपर्यंत लिहा. (घटक २)	२०
प्रश्न ४ था	२ पैकी १ प्रश्नाचे उत्तर ३०० शब्दांपर्यंत लिहा. (घटक २)	१५
सत्र परीक्षा एकूण गुण		७०
अंतर्गत मूल्यमापन		
(घटक १)		
१	अभ्यासेतर-अभ्यासपूरक उपक्रम : जिल्हा ते आंतरराष्ट्रीय स्तरावरील यशस्वी सहभाग / साहित्यविषयक विशेष योगदान / अभ्याससहल / क्षेत्रभेट / अहवाल लेखन	१०
२	प्रकल्प कार्य / सादरीकरण / स्वाध्याय / चर्चासत्र / गटचर्चा / अभिवाचन	
चाचणी (घटक २)		२०
सत्र परीक्षा आणि अंतर्गत मूल्यमापन एकूण गुण		१००
विशेष सूचना :		
<ul style="list-style-type: none"> <li>● अंतर्गत मूल्यमापनाचे नियोजन महाविद्यालयाने करावे.</li> <li>● विद्यार्थ्यांचे अंतर्गत मूल्यमापनविषयक लेखन / तपशील विद्यापीठाच्या निर्देशानुसार, विहित कालावधीपर्यंत महाविद्यालयाकडे जमा असणे आवश्यक आहे.</li> <li>● विद्यापीठाच्या निर्देशानुसार विहित मुदतीत गुण विद्यापीठाकडे पाठवावे.</li> </ul>		

द्वितीय वर्ष कला (S. Y. B. A.)

पर्यायी अभ्यासक्रम

पहिले सत्र

विषयाचे नाव

व्यावहारिक व उपयोजित मराठी - भाग ३ [CC – 1 C (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. उपयोजित व सर्जनशील लेखनाची क्षमता विकसित करणे.
२. मराठी भाषेची कार्यालयीन, व्यावसायिक कामकाजातील गरज, स्वरूप आणि उपयोजन यांची माहिती करून घेणे.
३. कार्यालयीन, व्यावसायिक भाषा व्यवहारासाठी आवश्यक लेखनकौशल्ये प्राप्त करणे.
४. नवसमाजमाध्यमांतील विविध भाषिक आविष्कारांचे स्वरूप समजून घेणे.

घटक	तपशील	श्रेयांक	तासिका
१	भाषा आणि जीवनव्यवहार भाषा म्हणजे काय? परिभाषेची आवश्यकता, विविध शब्दकोशांची ओळख, शास्त्रीय, व्यवहार, साहित्य, कार्यालयीन भाषा.	१	१५
२	कार्यालयीन लेखन : औपचारिक : माहितीपत्रक, परिपत्रक, सूचना पत्रक इ. अनौपचारिक : ट्विटर, व्हाट्सअप, चित्रफिती इत्यादी	१	१५
३	स्वपरिचय, अर्ज लेखन, जाहिरात लेखन	१	१५

दुसरे सत्र  
विषयाचे नाव

व्यावहारिक व उपयोजित मराठी - भाग ४ [CC – 1 D (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. उपयोजित व सर्जनशील लेखनाची क्षमता विकसित करणे.
२. संगणकाची भाषा आणि त्यातील विविध भाषिक आविष्कारांचे स्वरूप समजून घेणे.
३. विविध कोशांसाठी नोंदलेखन क्षमता विकसित करणे.

घटक	तपशील	श्रेयांक	तासिका
१	इतिवृत्त आणि टिप्पणी लेखन	१	१५
२	संगणक आणि मराठी : मुक्तस्रोत साधनांचा वापर, युनिकोड टंक ओळख, वर्ड एक्सेल, पॉवर पॉईंट.	१	१५
३	विश्वकोश, ज्ञानकोश, विकिपीडिया लेखन : नोंद म्हणजे काय? नोंदीची उदाहरणे, नोंदीची भाषांतरे, प्रत्यक्ष नोंदलेखन	१	१५

संदर्भ ग्रंथ :

१. संगणक, अच्युत गोडबोले, मौज प्रकाशन, मुंबई.
२. इंटरनेट, डॉ. प्रबोध चोबे, मनोरमा प्रकाशन, मुंबई.
३. व्यावहारिक मराठी, डॉ. ल. रा. नसिराबादकर, फडके प्रकाशन, कोल्हापूर.
४. आधुनिक माहिती तंत्रज्ञानाच्या विश्वात, दीपक शिक्रापूरकर, उज्ज्वल मराठे, उत्कर्ष प्रकाशन, पुणे.
५. भाषांतरमीमांसा, कल्याण काळे, अंजली सोमण.
६. व्यावहारिक मराठी, पुणे विद्यापीठ प्रकाशन, पुणे.
७. व्यावहारिक मराठी, डॉ. कल्याण काळे, डॉ. दत्तात्रेय पुंडे, निराली प्रकाशन, पुणे.
८. व्यावहारिक मराठी, डॉ. लीला गोविलकर, डॉ. जयश्री पाटणकर, स्नेहवर्धन प्रकाशन, पुणे.
९. प्रसारमाध्यमांसाठी लेखन कौशल्य, यशवंतराव चव्हाण मुक्त विद्यापीठ नाशिक.
१०. व्यावहारिक मराठी, डॉ. सयाजीराजे मोकाशी, डॉ. रंजना नेमाडे
११. व्यावहारिक मराठी, डॉ. ल. रा. नसिराबादकर, फडके प्रकाशन, कोल्हापूर.
१२. प्रसार माध्यमे आणि मराठी भाषा, संपादक, डॉ. भास्कर शेळके
१३. व्यावहारिक व उपयोजित मराठी आणि प्रसारमाध्यमांची कार्यशैली, संपादक, डॉ. संदीप सांगळे
१४. व्यावहारिक आणि उपयोजित मराठी, डॉ. मनोहर रोकडे
१५. मराठी भाषा उपयोजन आणि सर्जन, प्रा. सुहासकुमार बोबडे
१६. व्यावहारिक मराठी, संपादक डॉ. स्नेहल तावरे, स्नेहवर्धन प्रकाशन, पुणे.
१७. भाषांतरमीमांसा, संपादक डॉ. रमेश वरखेडे, यशवंतराव चव्हाण मुक्त विद्यापीठ, नाशिक.
१८. सायबर संस्कृती, डॉ. रमेश वरखेडे
१९. उपयोजित मराठी, संपादक डॉ. केतकी मोडक, संतोष शेणई, सुजाता शेणई
२०. ओळख माहिती तंत्रज्ञानाची, टिमोथी जे. ओ लिअरी
२१. <https://play.google.com/store/apps/details?id=org.mkcl.solar.itmarathi&hl>

प्रश्नपत्रिकेचे स्वरूप

- व्यावहारिक व उपयोजित मराठी - भाग ३ [CC – 1 C (3)] (सत्र १)
- व्यावहारिक व उपयोजित मराठी - भाग ४ [CC – 1 D (3)] (सत्र २)

विद्यापीठ सत्र परीक्षा		
वेळ : ३ तास	घटकनिहाय प्रश्न तपशील	गुण : ७०
प्रश्न क्रमांक		गुण
प्रश्न १ ला	६ पैकी ४ प्रश्नांची उत्तरे लिहा. (घटक २ व ३)	२०
प्रश्न २ रा	३ पैकी २ उपप्रश्नांची उत्तरे लिहा. (घटक १)	२०
प्रश्न ३ रा	३ पैकी २ उपप्रश्नांची उत्तरे लिहा. (घटक २ आणि ३)	२०
प्रश्न ४ था	२ पैकी १ उपप्रश्नाचे उत्तर लिहा. (घटक २ आणि ३)	१०
सत्र परीक्षा एकूण गुण		७०
अंतर्गत मूल्यमापन		
चाचणी (घटक २ आणि ३)		२०
(घटक-१)		
१	अभ्यासेतर - अभ्यासपूरक उपक्रम : जिल्हा ते आंतरराष्ट्रीय स्तरावरील यशस्वी सहभाग / साहित्यविषयक विशेष योगदान / अभ्याससहल / क्षेत्रभेट / अहवाल लेखन	१०
२	प्रकल्प कार्य / सादरीकरण / स्वाध्याय / चर्चासत्र / गटचर्चा / अभिवाचन	
सत्र परीक्षा आणि अंतर्गत मूल्यमापन एकूण गुण		१००
विशेष सूचना :		
<ul style="list-style-type: none"> <li>● अंतर्गत मूल्यमापनाचे नियोजन महाविद्यालयाने करावे.</li> <li>● विद्यार्थ्यांचे अंतर्गत मूल्यमापनविषयक लेखन / तपशील विद्यापीठाच्या निर्देशानुसार, विहित कालावधीपर्यंत महाविद्यालयाकडे जमा असणे आवश्यक आहे.</li> <li>● विद्यापीठाच्या निर्देशानुसार विहित मुदतीत गुण विद्यापीठाकडे पाठवावे.</li> </ul>		

द्वितीय वर्ष कला (S. Y. B. A.)

पहिले सत्र

विषयाचे नाव

आधुनिक मराठी साहित्य : प्रकाशवाटा [DSE 1 A (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. आत्मचरित्र या साहित्यप्रकाराचे स्वरूप, संकल्पना समजावून घेणे.
२. आत्मचरित्र या साहित्यप्रकाराच्या प्रेरणा आणि वाटचाल यांची ओळख करून घेणे.
३. ललित गद्यातील अन्य साहित्यप्रकारांच्या तुलनेत आत्मचरित्राचे वेगळेपण समजावून घेणे.
४. नेमलेल्या या आत्मचरित्राचे आकलन, आस्वाद आणि विश्लेषण करणे.

घटक	तपशील	श्रेयांक	तासिका
१	आत्मचरित्र : संकल्पना, स्वरूप; प्रेरणा आणि वाटचाल अन्य साहित्यप्रकारांच्या तुलनेत आत्मचरित्राचे वेगळेपण	१	१५
२	अभ्यासपुस्तक प्रकाशवाटा - डॉ. प्रकाश आमटे समकालीन प्रकाशन, पुणे	२	३०

संदर्भ ग्रंथ:

१. चरित्र - आत्मचरित्र, अ. म. जोशी
२. चरित्र - आत्मचरित्र, सदा कऱ्हाडे
३. आत्मचरित्र मीमांसा, आनंद यादव
४. मराठीतील आत्मचरित्रपर लेखन, ऊषा हस्तक
५. मराठी वाङ्मय कोश, खंड ४, संपादक, विजया राजाध्यक्ष
६. आत्मचरित्र, मराठी विश्वकोश, खंड २
७. २० व्या शतकातील मराठी आत्मचरित्र, उषा हस्तक

दुसरे सत्र  
विषयाचे नाव

मध्ययुगीन मराठी साहित्य: निवडक मध्ययुगीन गद्य, पद्य [DSE 1 B (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. मध्ययुगीन गद्य – पद्य साहित्यप्रकारांची ओळख करून घेणे.
२. नेमलेल्या अभ्यासपुस्तकातील मध्ययुगीन गद्य - पद्याचे आकलन, आस्वाद आणि विश्लेषण करणे.

घटक	तपशील	श्रेयांक	तासिका
१	मध्ययुगीन गद्य : महानुभावीय गद्य, बखर, ऐतिहासिक पत्रे; स्वरूप आणि विशेष मध्ययुगीन पद्य : अभंग, भारूड, गवळण, पोवाडा, लावणी; स्वरूप आणि विशेष	१	१५
२	अभ्यासपुस्तक निवडक मध्ययुगीन गद्य, पद्य संपादक प्रा. डॉ. शिरीष लांडगे, प्रा. डॉ. प्रभाकर देसाई, प्रा. डॉ. प्रकाश शेवाळे प्रशांत पब्लिकेशन्स, जळगाव	२	३०

संदर्भ ग्रंथ

१. पाच संतकवी, शं.गो.तुळपुळे
२. महाराष्ट्र सारस्वत, वि.ल.भावे,शं.गो.तुळपुळे
३. संत कवी आणि कवयित्री : एक अनुबंध, सुहासिनी इर्लेकर
४. संत साहित्य दर्शन, उषा देशमुख
५. प्राचीन मराठी वाङ्मयाचा इतिहास, ल. रा. नासिराबादकर
६. संत वचनमृत, रा. द. रानडे
७. ज्ञानेश्वरांची जीवननिष्ठा, गं. बा. सरदार
८. संत नामदेव, हे. वि. इनामदार
९. प्राचीन मराठी वाङ्मयाचा इतिहास, अ. ना. देशपांडे
१०. संत वाङ्मयाची सामाजिक फलश्रुती, गं. बा. सरदार
११. श्री एकनाथ: वाङ्मय आणि कार्य, न. र. फाटक
१२. तुकाराम दर्शन, सदानंद मोरे
१३. संतसाहित्य आकलन आणि अध्यापन, संपादक वसंत आबाजी डहाके आणि इतर, महाराष्ट्र राज्य माध्य. व उच्च माध्य. शिक्षण मंडळ, पुणे.
१४. नामदेव गाथा, ह. श्री. शेणोलीकर, साहित्य अकादेमी
१५. महानुभाव आणि वारकरी साहित्य, सुग्राम पुल्ले
१६. महानुभाव आणि वारकरी साहित्याचे अंतरंग, सुग्राम पुल्ले
१७. साहित्याची सामाजिकता, डॉ.सतीश बडवे,शब्दालय प्रकाशन,श्रीरामपूर,अहमदनगर.
१८. मध्ययुगीन साहित्याविषयी, डॉ.सतीश बडवे, मीरा बुक्स व पब्लिकेशन,औरंगाबाद.
१९. संत साहित्य समीक्षेचे बीजप्रवाह, डॉ.सतीश बडवे, गुरुकुल प्रतिष्ठान,पुणे.

२०. मराठी संत कवयित्रींचा इतिहास, डॉ. विद्यासागर पटांगणकर
२१. वारकरी संप्रदाय : साहित्य व तत्त्वज्ञान, डॉ. विद्यासागर पटांगणकर
२२. मध्ययुगीन मराठी वाङ्मयाचा इतिहास, डॉ. विद्यासागर पटांगणकर
२३. तुका झाला पांडुरंग, दीपक बिचे
२४. संत शिरोमणी बाबा नामदेव, दीपक बिचे

प्रश्नपत्रिकेचे स्वरूप

- आधुनिक मराठी साहित्य : प्रकाशवाटा - डॉ. प्रकाश आमटे [DSE 1 A (3)] (सत्र १)
- मध्ययुगीन मराठी साहित्य : निवडक मध्ययुगीन गद्य, पद्य [DSE 1 B (3)] (सत्र २)

विद्यापीठ सत्र परीक्षा		
वेळ : ३ तास	घटकनिहाय प्रश्न तपशील	गुण : ७०
प्रश्न क्रमांक		गुण
प्रश्न १ ला	५ पैकी ३ प्रश्नांची उत्तरे प्रत्येकी ५० शब्दांपर्यंत लिहा. (घटक १ व २)	१५
प्रश्न २ रा	३ पैकी २ प्रश्नांची उत्तरे प्रत्येकी १५० शब्दांपर्यंत लिहा. (घटक १)	२०
प्रश्न ३ रा	३ पैकी २ उपप्रश्नांची उत्तरे प्रत्येकी २०० शब्दांपर्यंत लिहा. (घटक २)	२०
प्रश्न ४ था	२ पैकी १ प्रश्नाचे उत्तर ३०० शब्दांपर्यंत लिहा. (घटक २)	१५
सत्र परीक्षा एकूण गुण		७०
अंतर्गत मूल्यमापन		
(घटक-१)		
१. अभ्यासेतर-अभ्यासपूरक उपक्रम : जिल्हा ते आंतरराष्ट्रीय स्तरावरील यशस्वी सहभाग / साहित्यविषयक विशेष योगदान / अभ्याससहल / क्षेत्रभेट / अहवाल लेखन		१०
२. प्रकल्प कार्य / सादरीकरण / स्वाध्याय / चर्चासत्र / गटचर्चा / अभिवाचन		
चाचणी (घटक २ आणि ३)		२०
सत्र परीक्षा आणि अंतर्गत मूल्यमापन एकूण गुण		१००
विशेष सूचना :		
<ul style="list-style-type: none"> <li>● अंतर्गत मूल्यमापनाचे नियोजन महाविद्यालयाने करावे.</li> <li>● विद्यार्थ्यांचे अंतर्गत मूल्यमापनविषयक लेखन / तपशील विद्यापीठाच्या निर्देशानुसार, विहित कालावधीपर्यंत महाविद्यालयाकडे जमा असणे आवश्यक आहे.</li> <li>● विद्यापीठाच्या निर्देशानुसार विहित मुदतीत गुण विद्यापीठाकडे पाठवावे.</li> </ul>		



द्वितीय वर्ष कला (S. Y. B. A.)

पहिले सत्र

विषयाचे नाव

साहित्यविचार [DSE 2 A (3)]

अभ्यासक्रमाची उद्दिष्टे :

१. भारतीय आणि पाश्चात्य साहित्यविचाराच्या आधारे साहित्याची संकल्पना, स्वरूप आणि प्रयोजनविचार समजावून घेणे.
२. साहित्याची निर्मितीप्रक्रिया समजावून घेणे.
३. साहित्याची भाषा आणि शैली विषयक विचार समजावून घेणे.

घटक	तपशील	श्रेयांक	तासिका
१	<ul style="list-style-type: none"><li>● साहित्याचे स्वरूप आणि प्रयोजन</li><li>१. साहित्याची संकल्पना (भारतीय, पाश्चात्यांच्या व्याख्या), साहित्यातील अनुभवाचे विशेष : वास्तव आणि कल्पित यांचा संबंध, संवेदनात्मकता, भावनात्मकता, वैचारिकता, सेन्द्रीयत्व, सूचकता, विशिष्ट आणि विश्वात्मकता</li><li>२. प्रयोजन म्हणजे काय? मम्मटाची प्रयोजने; तसेच इच्छापूती, जिज्ञासातृप्ती, विरेचन, आत्माविष्कार, अनुभवविश्वाची समृद्धी, स्वप्नरंजन, उद्धोधन, प्रचार, मनोरंजन, आनंद या प्रयोजनांचा विचार.</li></ul>	१	१५
२	<ul style="list-style-type: none"><li>● साहित्याची निर्मितीप्रक्रिया</li><li>१. प्रतिभा, स्फूर्ती, कल्पना, चमत्कृती यांचे स्वरूप, संकल्पना आणि कार्य; साहित्यिकाचे व्यक्तिमत्त्व : संवेदनक्षमता, शैशववृत्ती, अनुभवसमृद्धी व विद्वत्ता, साहित्यिकाचा जीवनविषयक आणि साहित्य विषयक दृष्टिकोन.</li></ul>	१	१५
३	<ul style="list-style-type: none"><li>● साहित्याची सामाजिकता व भाषा</li><li>१. साहित्य आणि समाज, जीवनमूल्ये आणि साहित्य मूल्ये, साहित्यवाचनाची प्रक्रिया व आवश्यकता</li><li>२. साहित्याची भाषा : शब्दार्थाचा वक्रव्यापार; वक्रोक्ती, अलंकार, प्रतिमा, प्रतीक, प्राक्कथा</li><li>३. शैली विषयक स्थूल चर्चा - लेखक, आशय, साहित्यप्रकार या अनुरोधाने चर्चा</li></ul>	१	१५

## संदर्भ साहित्य :

१. साहित्यविचार, डॉ. अ. वा. कुलकर्णी
२. साहित्यविचार, (संपा.) डॉ. द.दि. पुंडे, डॉ. स्नेहल तावरे
३. साहित्यविचार, भालचंद्र खांडेकर
४. भारतीय साहित्यविचार, डॉ. लीला गोविलकर
५. काव्यशास्त्र प्रदीप, डॉ. स. रा. गाडगीळ
६. वाङ्मयीन शैली आणि तंत्र, म. द. हातकणंगलेकर
७. साहित्य आणि सामाजिक संदर्भ – रा. ग जाधव
८. साहित्य व सामाजिक संदर्भ – डॉ. अंजली सोमण
९. कविता आणि प्रतिमा - सुधीर रसाळ
१०. साहित्यशास्त्र स्वरूप व समस्या, डॉ. वसंत पाटणकर
११. साहित्य स्वरूप आणि समीक्षा, वा. ल. कुलकर्णी
१२. पाश्चात्य साहित्यविचार, बालशंकर देशपांडे

## द्वितीय सत्र

विषयाचे नाव

### साहित्य समीक्षा [DSE 2 B(3)]

#### अभ्यासक्रमाची उद्दिष्टे :

१. साहित्य समीक्षेची संकल्पना, स्वरूप यांचा परिचय करून घेणे.
२. साहित्य आणि समीक्षा यांचे परस्पर संबंध समजावून घेणे व अभ्यासणे .
३. साहित्यप्रकारानुसार समीक्षेचे स्वरूप समजावून घेणे व अभ्यासणे .
४. ग्रंथ परिचय, परीक्षण व समीक्षण यातील फरक समजावून घेणे.

घटक	तपशील	श्रेयांक	तासिका
१	<ul style="list-style-type: none"><li>● समीक्षा : संकल्पना आणि स्वरूप</li><li>१. समीक्षा : संकल्पना, स्वरूप आणि प्रयोजन</li><li>२. समीक्षा : व्याप्ती आणि प्रकार</li><li>३. साहित्यविचार आणि समीक्षा यातील अनुबंध</li><li>४. साहित्यव्यवहारातील समीक्षेचे स्थान व कार्य</li></ul>	१	१५
२	<ul style="list-style-type: none"><li>● साहित्य आणि समीक्षा यांचे परस्पर संबंध</li><li>१. साहित्यकृती आणि वाचक</li><li>२. साहित्यकृती आणि समीक्षक</li><li>३. समीक्षेतील साहित्याच्या आकलन, आस्वाद, विश्लेषण, अर्थनिर्णयन, मूल्यमापन आणि शब्दांकन यांचे स्थान व कार्य</li></ul>	१	१५
३	<ul style="list-style-type: none"><li>● समीक्षकाचे गुण व पाळावयाची पथ्ये</li><li>१. समीक्षकाचे गुण : रसिकता, प्रज्ञा, तुलनाक्षमता, चिकित्सकता, मूल्यविवेक, विश्लेषकता, व्युत्पन्नता, तुलनाक्षमता इ.</li><li>२. समीक्षकाने पाळावयाची पथ्ये : समीक्षाविषयाचे अवधान व तारतम्य, निकषाचे तारतम्य, व्यक्तिनिष्ठता व वस्तुनिष्ठता यांचे तारतम्य, मांडणी व शैली यांचे तारतम्य, संगती व सुसूत्रता यांचे भान, नेमकेपणा व तार्किकता या संबंधीचा विवेक, वाङ्मयीन मूल्ये व जीवनमूल्ये यांचा परस्परसंबंध आणि त्यांच्या वापराबाबत करावयाचा विवेक.</li><li>३. भाषिक, साहित्यिक, सांस्कृतिक संकेत आणि मूल्यव्यवहार</li><li>४. उपयोजित समीक्षा : ग्रंथ परिचय, ग्रंथ परीक्षण, ग्रंथ समीक्षा</li></ul>	१	१५

#### संदर्भग्रंथ :

१. साहित्य : स्वरूप आणि समीक्षा, वा. ल. कुलकर्णी
२. समीक्षामीमांसा, गंगाधर पाटील
३. मराठीचे साहित्यशास्त्र, मा. गो. देशमुख
४. टीका आणि टीकाकार, वा. भा. पाठक
५. साहित्यविचार आणि सौंदर्यशास्त्र, रा. भा. पाटणकर

६. मराठी समीक्षेची वाटचाल, गो. म. कुलकर्णी
७. सौंदर्यानुभव, प्रभाकर पाध्ये
८. सौंदर्य आणि साहित्य, बा. सी. मर्ढेकर
९. साहित्यातील अधोरेखिते, म. द. हातकणंगलेकर
१०. अब्राह्मणी साहित्याचे सौंदर्यशास्त्र, शरद पाटील
११. मराठी समीक्षेची सद्यस्थिती, वसंत आबाजी डहाके
१२. मराठी समीक्षेची वाटचाल, नीला पांढरे
१३. साहित्याची भाषा, भालचंद्र नेमाडे
१४. टीकास्वयंवर, भालचंद्र नेमाडे
१५. आधुनिक समीक्षा सिद्धांत, मिलिंद मालशे, अशोक जोशी
१६. समीक्षेतील नव्या संकल्पना, संपा. मनोहर जाधव
१७. साहित्य समाज आणि संस्कृती, दिगंबर पाध्ये
१८. मराठी कादंबरीची उपयोजित समीक्षा, गोमटेश्वर पाटील, दर्या प्रकाशन, पुणे
१९. मराठी कादंबरी समाजशास्त्रीय समीक्षा, रवींद्र ठाकूर, दिलीपराज प्रकाशन, पुणे
२०. साहित्य संशोधन : वाटा आणि वळणे, डॉ. सुधाकर शेलार, अक्षरवाङ्मय प्रकाशन, पुणे.
२१. साहित्य संशोधन व समीक्षा, राजेंद्र सलालकर

प्रश्नपत्रिकेचे स्वरूप

- साहित्यविचार [DSE 2 A (3)]
- साहित्य समीक्षा [DSE 2 B (3)]

विद्यापीठ सत्र परीक्षा		
वेळ : ३ तास	घटकनिहाय प्रश्न तपशील	गुण : ७०
प्रश्न क्रमांक		गुण
प्रश्न १ ला	३ पैकी २ प्रश्नांची उत्तरे प्रत्येकी ५० शब्दांपर्यंत लिहा. (घटक १, २, ३)	१०
प्रश्न २ रा	३ पैकी २ प्रश्नांची उत्तरे प्रत्येकी १५० शब्दांपर्यंत लिहा. (घटक १)	२०
प्रश्न ३ रा	३ पैकी २ प्रश्नांची उत्तरे प्रत्येकी २०० शब्दांपर्यंत लिहा. (घटक २)	२०
प्रश्न ४ था	३ पैकी २ प्रश्नांची उत्तरे २०० शब्दांपर्यंत लिहा. (घटक ३)	२०
सत्र परीक्षा एकूण गुण		७०
अंतर्गत मूल्यमापन		
(घटक-१)		
१	अभ्यासेतर - अभ्यासपूरक उपक्रम : जिल्हा ते आंतरराष्ट्रीय स्तरावरील यशस्वी सहभाग / साहित्यविषयक विशेष योगदान / अभ्याससहल-क्षेत्रभेट अहवाल लेखन / प्रकल्प कार्य / सादरीकरण / स्वाध्याय / चर्चासत्र / गटचर्चा / अभिवाचन	१०
चाचणी (घटक २ आणि ३)		२०
सत्र परीक्षा आणि अंतर्गत मूल्यमापन एकूण गुण		१००
विशेष सूचना :		
<ul style="list-style-type: none"> <li>• अंतर्गत मूल्यमापनाचे नियोजन महाविद्यालयाने करावे.</li> <li>• विद्यार्थ्यांचे अंतर्गत मूल्यमापनविषयक लेखन / तपशील विद्यापीठाच्या निर्देशानुसार, विहित कालावधीपर्यंत महाविद्यालयाकडे जमा असणे आवश्यक आहे.</li> <li>• विद्यापीठाच्या निर्देशानुसार विहित मुदतीत गुण विद्यापीठाकडे पाठवावे.</li> </ul>		

## द्वितीय वर्ष कला (S. Y. B. A.)

कौशल्याधिष्ठित अभ्यासक्रम

पहिले सत्र

विषयाचे नाव

प्रकाशनव्यवहार आणि संपादन [SEC 2 A (2)]

### अभ्यासक्रमाची उद्दिष्टे :

१. प्रकाशनव्यवहार आणि संपादन यासाठी आवश्यक कौशल्ये प्राप्त करणे.
२. प्रकाशनव्यवहार आणि संपादन यासाठी आवश्यक प्रशिक्षण घेणे.
३. प्रकाशनव्यवहार आणि संपादन यासाठी प्रात्यक्षिकासह उपयोजनाची कौशल्ये प्राप्त करणे.
४. प्रकाशन संस्था, जाहिरात संस्था, छापखाने, वृत्तपत्र कार्यालये, वितरण संस्था, ग्रंथ विक्री दुकाने, प्लेक्स निर्मिती केंद्र, वार्ताहर यांना भेटी देऊन प्रशिक्षण घेणे.

घटक		तपशील	श्रेयांक	तासिका
१	१	प्रकाशन संस्था : स्वरूप, कार्यप्रणाली, कॉपीराईट कायद्याची तोंडओळख, ग्रंथविक्री, वितरण, जाहिरात, वाचकसंवाद.		
१	२	ग्रंथनिर्मिती प्रक्रिया, ग्रंथ प्रकार : ललित, माहितीपर, शास्त्रीय, संदर्भग्रंथ इ.; ग्रंथनिर्मिती : संहिता संपादन, संपादकीय संस्कार, लेखक संवाद, मुखपृष्ठ, मुद्रणप्रत, छपाई, ग्रंथ बांधणी.	१	१५
२	१	मुद्रितशोधन : लेखनविषयक नियम, मुद्रितशोधन खुणा, विरामचिन्हे, अवतरणे, संक्षेप, मजकुराची मांडणी, चित्र रेखाटन योजना, सूची, संदर्भग्रंथसूची, परिशिष्टे, दर्शनीय स्वरूप, आकार.	१	१५

### संदर्भ ग्रंथ :

- १ पॉप्युलर रीतिपुस्तक, रामदास भटकळ, मृदुला जोशी
- २ सुगम मराठी व्याकरण व लेखन - मो.रा. वाळंबे
- ३ मराठीचे व्याकरण, डॉ. लीला गोविलकर
- ४ मराठी लेखन मार्गदर्शिका, यास्मिन शेख
- ५ मुद्रित-शोधन, य. ए. धायगुडे
- ६ शुद्ध शब्दकोश, डॉ. स्नेहल तावरे
- ७ मराठी शुद्धलेखन नियमावली, डॉ. स्नेहल तावरे
- ८ मराठी लेखन कोश, अरुण फडके
- ९ शुद्धलेखन मार्गप्रदीप, अरुण फडके
- १० उपयोजित मराठी, संपादक डॉ. केतकी मोडक, संतोष शेणई, सुजाता शेणई

- ११ मराठी व्याकरण स्वरूप आणि चिकित्सा, खंडेराव कुलकर्णी
- १२ लेखनमित्र, संपादक, संकलक, संतोष शिंत्रे आणि लौकिका रास्ते – गोखले
- १३ प्रकाशनविश्व, संपादक मोहन वैद्य
- १४ ए डिक्शनरी ऑफ मराठी अँड इंग्लिश – मोल्स्वर्थ  
<https://dsal.uchicago.edu/dictionaries/molesworth/>
- १५ भाषा संचालनालयाने प्रकाशित केलेले विषयवार कोश [www.marathibhasha.org](http://www.marathibhasha.org)
- १६ महाराष्ट्र शब्दकोश – संपादक य . रा . दाते आणि चिं. ग. कर्वे  
<https://www.transliterate.org/dictionary/mr.kosh.maharashtra/source>

दुसरे सत्र  
विषयाचे नाव

उपयोजित लेखनकौशल्ये [SEC 2 B (2)]

अभ्यासक्रमाची उद्दिष्टे :

१. जाहिरात, मुलाखतलेखन आणि संपादन यासाठी आवश्यक कौशल्ये प्राप्त करणे.
२. जाहिरात, मुलाखतलेखन आणि संपादन यासाठी आवश्यक प्रशिक्षण घेणे.
३. जाहिरात, मुलाखतलेखन आणि संपादन यासाठी प्रात्यक्षिकासह उपयोजनाची कौशल्ये प्राप्त करणे.

घटक	तपशील	श्रेयांक	तासिका
१	जाहिरातलेखन : प्रयोजन, स्वरूप, प्रकार, विविध माध्यमांतील जाहिरातींचे स्थान, जाहिरात कल्पना आणि संहितालेखन, इंटरनेट (माहिती महाजाल) जाहिरात आणि संहितालेखन	१	१५
२	मुलाखतलेखन : वृत्तपत्रे, नियतकालिके, दृक्श्राव्य माध्यमांसाठी मुलाखतलेखन		
२	माहितीपर नोंदी : शास्त्रीय ज्ञानकोश, विविध प्रकारचे ज्ञानकोश (विकिपीडिया, विश्वकोश इ. साठी) नोंदलेखन, विविध माध्यमांसाठी नोंद लेखन, प्रात्यक्षिके इ.	१	१५

संदर्भ ग्रंथ :

१. संगणक, अच्युत गोडबोले, मौज प्रकाशन, मुंबई.
२. इंटरनेट, डॉ. प्रबोध चोबे, मनोरमा प्रकाशन, मुंबई.
३. व्यावहारिक मराठी, डॉ. ल. रा. नसिराबादकर, फडके प्रकाशन, कोल्हापूर.
४. आधुनिक माहिती तंत्रज्ञानाच्या विश्वात, शिक्रापूरकर दीपक, मराठे उज्ज्वल, उत्कर्ष प्रकाशन, पुणे.
५. भाषांतरमीमांसा, कल्याण काळे, अंजली सोमण.
६. व्यावहारिक मराठी, पुणे विद्यापीठ प्रकाशन, पुणे.
७. व्यावहारिक मराठी, डॉ. कल्याण काळे, डॉ. दत्तात्रेय पुंडे, निराली प्रकाशन, पुणे.
८. व्यावहारिक मराठी, डॉ. लीला गोविलकर, डॉ. जयश्री पाटणकर, स्नेहवर्धन प्रकाशन, पुणे.
९. व्यावहारिक मराठी, डॉ. सयाजीराजे मोकाशी, डॉ. रंजना नेमाडे
१०. व्यावहारिक मराठी, डॉ. ल. रा. नसिराबादकर, फडके प्रकाशन, कोल्हापूर.
११. प्रसारमाध्यमांसाठी लेखन कौशल्ये, यशवंतराव चव्हाण महाराष्ट्र मुक्त विद्यापीठ, नाशिक.
१२. प्रसार माध्यमे आणि मराठी भाषा, संपादक, डॉ. भास्कर शेळके
१३. व्यावहारिक व उपयोजित मराठी आणि प्रसारमाध्यमांची कार्यशैली, संपादक, डॉ. संदीप सांगळे
१४. व्यावहारिक आणि उपयोजित मराठी, डॉ. मनोहर रोकडे
१५. मराठी भाषा उपयोजन आणि सर्जन, प्रा. सुहासकुमार बोबडे



१६. व्यावहारिक मराठी, संपादक डॉ. स्नेहल तावरे, स्नेहवर्धन प्रकाशन, पुणे.
१७. भाषांतरमीमांसा, संपादक डॉ. रमेश वरखेडे, यशवंतराव चव्हाण मुक्त विद्यापीठ, नाशिक.
१८. उपयोजित मराठी, संपादक डॉ. केतकी मोडक, संतोष शेणई, सुजाता शेणई
१९. साहित्य संशोधन : वाटा आणि वळणे, डॉ. सुधाकर शेलार, अक्षरवाङ्मय प्रकाशन, पुणे.
२०. जाहिरातविश्व, संपादक, नंदन दीक्षित, शब्द मल्हार प्रकाशन, प्रथम आवृत्ती, २०१९
२१. अक्षरनिष्ठांची मांदियाळी, (ग्रंथ-शोध आणि वाचन-बोध), अरुण टिकेकर, रोहन प्रकाशन, २०१२.
२२. विक्रत्यांचे अंतरंग, कि. मो. फडके, प्रथमावृत्ती, त्रिदल प्रकाशन, १९९७
२३. मुलाखतीचा मंत्र व नोकरीची हमी, भाऊसाहेब निमगिरीकर, श्रीविद्या प्रकाशन, २०१३.
२४. मुद्रणपर्व, दीपक घारे
२५. शब्दस्पर्श, दीपावली, २०१५
२६. पुस्तकांची मुखपृष्ठे आणि मांडणी, संपादक, अस्मिता मराठ
२७. शब्दस्पर्श, वार्षिक विशेषांक २०१७
२८. पुस्तकविक्रीच्या शटरमागे, संपादक, अस्मिता साठे
२९. मराठी ग्रंथप्रकाशनाची २०० वर्षे, शरद गोगटे, राजहंस प्रकाशन, २००८
३०. लेखनकला आणि लेखनव्यवसाय, वा. गो. आपटे, आनंद कार्यालय, पुणे, १९२६
३१. बखर एका प्रकाशकाची, कुलकर्णी पं. अ. , मेनका प्रकाशन, पुणे १९९२
३२. प्रकाशक रा. ज. देशमुख, प्रकाशक, सदानंद भटकळ, संपा. सदानंद भटकळ, मुकुंदराव किलोस्कर आणि जया दडकर
३३. जाहिरातीचं जग, यशोदा भागवत, मौज प्रकाशन, तिसरी आवृत्ती, २०१७
३४. दशक्रियेची चित्रकथा, संजय कृष्णाजी पाटील, साकेत प्रकाशन, पहिली आवृत्ती, २०१९
३५. अलका तू असं लिही, सौ. मालती दांडेकर, वरदा बुक्स, दुसरी आवृत्ती, १९९५
३६. प्रकाशनातील भावे प्रयोग आणि पतंगाची दोरी, ह. अ. भावे, मंदाकिनी भावे, वरदा बुक्स, पहिली आवृत्ती, २०१४
३७. डॉ. आनंदीबाई जोशी, एका लघुपटाची रोजनिशी, अंजली किर्तने, शब्द प्रकाशन, प्रथमावृत्ती मे २००९
३८. स्वातंत्र्यवीर सावरकर चित्रपटकथा व संवाद, भाग पहिला, विश्राम बेडेकर, पॉप्युलर प्रकाशन, पहिली आवृत्ती, १९९१
३९. पत्रकारितेची मूलतत्त्वे, प्रभाकर पाध्ये, अनु. प्र. ना. परांजपे, वसुधा परांजपे, मेहता पब्लिशिंग हाऊस, पुनर्मुद्रण, २०१४
४०. वृत्तपत्र व्यवसाय काल आणि आज, डॉ. सुधाकर पवार, प्रकाशक, प्रमोद पवार, प्रथमावृत्ती, मार्च १९८६
४१. गाथा कर्नाटक प्रिंटिंग प्रेसची, सदानंद भटकळ, मूळ ग्रंथ: द कर्नाटक प्रेस सागा, अनु. उषा टाकळकर, पद्मगंधा प्रकाशन, पहिली आवृत्ती, २०१०.
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५४. <https://play.google.com/store/apps/details?id=org.mkcl.solar.itmarathi&hl>
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प्रश्नपत्रिकेचे स्वरूप

- प्रकाशनव्यवहार आणि संपादन [SEC 2 A (2)]
- उपयोजित लेखनकौशल्ये [SEC 2 B (2)]

विद्यापीठ सत्र परीक्षा		
वेळ : २ तास	घटकनिहाय प्रश्न तपशील	गुण : २५
प्रश्न क्रमांक		गुण
प्रश्न १ ला	दोन पैकी एका प्रश्नाचे उत्तर लिहा. (घटक १.१)	१०
प्रश्न २ रा	दोन पैकी एका प्रश्नाचे उत्तर लिहा. (घटक १.२)	१०
प्रश्न ३ रा	दोन पैकी एका प्रश्नाचे उत्तर लिहा. (घटक २)	५
एकूण गुण		२५
अंतर्गत मूल्यमापन		
लेखी परीक्षा, गृहपाठ, चर्चासत्र सादरीकरण, समूह चर्चा, प्रकल्प कार्य, अभ्यास भेट यापैकी कोणत्याही दोन प्रकारांतून अंतर्गत मूल्यमापन करावे. (१५+१०)		२५
एकूण गुण		५०
विशेष सूचना :		
<ul style="list-style-type: none"> <li>● अंतर्गत मूल्यमापनाचे नियोजन महाविद्यालयाने करावे.</li> <li>● विद्यार्थ्यांचे अंतर्गत मूल्यमापनविषयक लेखन / तपशील विद्यापीठाच्या निर्देशानुसार, विहित कालावधीपर्यंत महाविद्यालयाकडे जमा असणे आवश्यक आहे.</li> <li>● विद्यापीठाच्या निर्देशानुसार विहित मुदतीत गुण विद्यापीठाकडे पाठवावे.</li> </ul>		

# Savitribai Phule Pune University, Pune

## Under the Faculty of Humanities

Structure of Choice Based Credit System for Undergraduate Programme to be implemented from Academic Year 2020-2021

### Subject- History

Semester	Core Courses (CC)	Ability Enhancement Compulsory Course (AEC)	Skill Enhancement Courses (SEC)	Discipline Specific Elective Courses (DSE)
III	CC-1(3) History of the Marathas: (1630-1707)		Any One Choose SEC -2 A (2) 1.Bhrahmi Script OR 2.Art &Architecture in Early India OR 3.Digital Documentation OR 4.Tourism Management	DSE-1A (3) 1.Medieval India - Sultanate Period
				Any One Choose DSE-2A (3) 2.Glimpses of the Modern World - Part I OR 3. History of East Asia
IV	CC-2(3) History of the Marathas: (1707-1818)		Any One Choose SEC -2 B (2) 5.Modi Script OR 6.Medieval Indian, Art &Architecture OR 7.Popular Indian Culture OR 8.Travel Agency & Tour Business	DSE-1B (3) 4.Medieval India: Mughal Period
				DSE-2B (3) 5. Glimpses of the Modern World - Part II OR 6. History of West Asia

## Exam Pattern

1.Exam Pattern of Core Courses (CC) and Discipline Specific Elective Courses (DSE)will be as follow

Mark Distribution	
University Semester Exam	70
Internal Assessment	30
Total	100

2.Exam Pattern of Skill Enhancement Courses (SEC) will be held as per notification of university

3. Guideline for University Semester Exam

University Semester Exam			
Sr. No.	Question No.	Distribution of Marks	Total
1	Que.1	15	
2	Que.2	15	
3	Que.3	20	
4	Que.4	20	
Total	4	70	70

3. Pattern of Question paper for End of Semester Examination for Semester

Duration: 3 Hours	Maximum Marks:70
Number of Questions: Four	
Q.1: Answer the following questions in 300 words any one out of two	15
Q.2: Answer the following questions in 300 words any one out of two	15
Q.3: Answer the following questions in 200 words any two out of Four	20
Q.4: Short note any Four out of Six	20
Total Marks	70

4. Guideline for Internal Assessment

1	Written Test	20	30
2	Assignment/ Project/Group Discussion/Study visit	10	

**Savitribai Phule Pune University, Pune**

**Proposed Syllabus in History for S.Y.B.A. (Credit System) from the academic Year 2020-21**

**Under the Faculty of Humanities**

**Core Course-I (CC- 1C)**

**Semester -III-History of the Marathas: (1630-1707)**

**Learning Objectives:**

1. To introduce the students to the regional history of medieval Maharashtra and India.
2. To study political, social and conceptual history of the Marathas in an analytical way with the help of primary sources.
3. To evaluate contribution of Chhatrapati Shivaji Maharaj to the establishment of Swarajya, contribution of successors and later development of the Maratha kingdom.
4. To study administrative Institutions of the Maratha.

**Learning Outcome:**

1. Student will develop the ability to analyse sources for Maratha History.
2. Student will learn significance of regional history and political foundation of the region.
3. It will enhance their perception of 17th century Maharashtra and India in context of Maratha history.
4. Appreciate the skills of leadership and the administrative system of the Marathas.

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

**Unit-I: Sources and Rise of the Maratha Power 12**

- a) Literary Sources: Marathi and Foreign Sources (Portuguese, English, French)
- b) Background of the rise of Maratha Power
- c) Shahaji Raje, Rajmata Jijabai and Early Life of Chhatrapati Shivaji Maharaj

**Unit-II: Foundation of Swarajya to the Coronation, Karnataka Expedition 16**

- a) Relations with Adilshahi: Javali and Afzal Khan episode and its importance
- b) Relations with Mughals: Campaign of Shayasta Khan, Sack of Surat, expedition of Jaisingh, Visit to Agra
- c) Coronation and Karnataka Expedition

**Unit-III: Administration under Chhatrapati Shivaji Maharaj 08**

- a) Military
- b) Civil

#### **Unit-IV: Chhatrapati Sambhaji Maharaj to the Maratha War of Independence**

12

- a) Chhatrapati Sambhaji Maharaj: Consolidation of power, Relations with Mughals.
- b) Chhatrapati Rajaram Maharaj, Maharani Tarabai and Mughals
- c) SantajiGhorpade, Dhanaji Jadhav and RamchandrapantAmatya

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**Under the Faculty of Humanities**  
**Discipline Specific Elective Course (DSE-1A)**  
**Semester -III-Medieval India - Sultanate Period**

**Course objectives:**

1. Demonstrate thinking skills by analyzing, synthesizing, and evaluating historical information from multiple sources.
2. Develop the ability to distinguish between fact and fiction while understanding that there is no one historical truth.
3. To Learn foundation of Delhi Sultanate and Sultanate Administration.
4. To understand the socio, economic condition of Delhi Sultanate

**Course outcome:**

1. Provides examples of sources used to study various periods in history.
2. Relates key historical developments during medieval period occurring in one place with another.
3. Analyses socio - political and economic changes during medieval period
4. Estimate the foreign invasion and the achievement of rulers

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/ Tests/Quiz/Maps./Field visit/ Group Discussion/ Seminar /use of e-learning

**Unit I: Foundation of the Delhi Sultanate** **12**

- a) Sources of Historiography of Sultanate Period
- b) Invasions of Muhammad Ghori
- c) Foundation of Delhi Sultanate: Qutbuddin Aibak

**Unit II: The early Sultans of Delhi and their contributions** **10**

- a) Iltutmish
- b) Raziyya
- c) Balban

**Unit III: Expansion of Sultanate** **16**

- a) AlauddinKhalji: Expansion and Administrative Reforms
- b) Experiments of Muhammad-Bin-Tughlaq, Firuz Tughlaq: Administrative Reforms.
- c) The Saiyyids, the Lodis and the decline of the sultanate.

**Unit IV: Kingdoms of Vijayanagar and Bahamani** **10**

- a) Rise of Vijayanagar Empire: Harihar, Bukka, Krishnadevray

- b) The Emergence and expansion of the Bahamani Kingdom: Contribution of MuhmudGawan
- c) Disintegration of Bahamani Kingdom

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**Under the Faculty of Humanities**  
**Discipline Specific Elective Course (DSE-2A)**  
**Semester -III-Glimpses of the Modern World - Part I**

**Learning Objectives:**

1. This paper is designed to introduce the students to the history of the Modern World with its socio-religious, political and economic developments.
2. It will enable students to study interesting historical developments in the countries other than India, which had a significant impact on almost all over the Modern World.
3. It will enable students to understand the significant impact of the modern concepts such as Renaissance, Nationalism, Communism, Imperialism, etc.
4. It will get students acquainted with the major revolutions, and political developments which led to the World War I and its consequences.

**Learning Outcomes:**

1. It will enable students to develop the overall understanding of the Modern World.
2. The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.
3. It will enhance their perception of the history of the Modern World.
4. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World.

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

<b>Unit I. The Modern Age</b>	<b>6</b>
a) Renaissance - Background and Nature	
b) Religious Reforms Movement - Martin Luther King	
<b>Unit II. The Age of Revolutions</b>	<b>14</b>
a) The American Revolution - Causes and Consequences	
b) The French Revolution - Causes and Consequences	
c) The Industrial Revolution - Causes and Consequences	
<b>Unit III. Nationalism</b>	<b>14</b>
a) Unification of Italy	
b) Unification of Germany	
c) Japan - The Meiji Revolution	

## Unit IV. World War I and Rise of Communism

14

- a) World War I - Causes and Consequences
- b) Paris Peace Settlement; League of Nations
- c) The Russian Revolution - Causes and Consequences

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- 2.Corwall R.D.: World History in 20th Century, Longman, London, 1976.
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**Under the Faculty of Humanities**  
**Discipline Specific Elective Course (DSE-2A)**  
**Semester -III - History of East Asia**

**Learning Objectives:**

1. The course is designed to enable students to understand the history of Modern East Asia.
2. It will acquaint students with the notable events in contemporary Asia.
3. It will orient students to understand the economic transition in Asia during 20<sup>th</sup> century and the impact of all this on world politics.
4. It will enable students to understand the history of China and Japan.

**Learning Outcomes:**

1. It will enable students to develop the overall understanding of the Asian countries.
2. The students will get acquainted with the Communism in China & Imperialism of Japan.
3. It will enhance their perception of the developmental Policies of the Asian Countries.
4. It will enable students to understand the significance of China and Japan in the Modern World.

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

**Unit I: China: From Nationalism towards Communism. 12**

- a) Rise and Growth of Nationalism
- b) Yuan-ShiKai and Republic
- c) Chiang-Kai-Shek and National Government.
- d) Kuomintang-Communist Relation; Communist Revolution of 1949

**Unit II: Development and Foreign Policy of Communist China. 12**

- a) Agricultural Developments, Five Year Plan.
- b) Development in Science & Technology, Military
- c) Foreign Policy- India, and Taiwan

**Unit III: Japanese Imperialism. 12**

- a) Russia- Japan War (1904-05).
- b) Japan and the World War I.
- c) Washington Conference – Manchurian Crises.
- d) Japan and the World War II.

- a) General Mac Arthur and Reconstruction of Japan.
- b) Economic Development of Japan.
- c) Development in Science & Technology.

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3. Beasley W.G., The Modern History of Japan.
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**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC 2 A ) – (2 Credits)**

**Notes:**

- 1. The University Grants Commission has made it compulsory for students to earn two credits from a Skill Enhancement Course (SEC) in each semester second year onwards.**
- 2. It is mandatory for the student to complete one Skill Enhancement Course (SEC) in each semester from Semester III to Semester VI.**
- 3. It must be noted that student has to choose any one of the four Skill Enhancement Courses (SEC) for each Semester.**
- 4. Each Skill Enhancement Course (SEC) will have two (2) credits only.**

**Skill Enhancement Course (SEC-1A) – (2 Credits)**

**Semester III- 1) Brahmi Script**

**Course Objectives:**

1. This paper is designed to introduce the students to the Brahmi Script, which is essential to understand the history of Early India.
2. It will enable students to read and understand the Brahmi Script and thus they will be able to
3. unfold Early Indian History.
4. It will get students acquainted with the primary sources such as Ashokan Pillars, some of the Buddhist texts, written in Brahmi script.

**Course Outcome:**

1. Students will learn to understand the Brahmi Script so as to understand important sources of the history of Early India.
2. They will be able to read and understand the Brahmi Script.
3. They will have an overall understanding of the history of Early India.

**Course Content:**

**Unit. IBrahmi Script Introduction**

- a) Difference between Language & Script.
- b) History of Brahmi script.
- c) Importance of Script



## **Unit. II Brahmi Script**

- a) Vowels
- b) Consonant
- c) Numbers

## **Unit.III Types of Brahmi -**

### **Variations of strokes in various period**

- a) Ashokan (Maurya)
- b) Satavahana
- c) Kushana, Shaka
- d) Gupta etc.

## **Unit IV. Types of inscription -Rock cut Inscriptions**

- a) Copperplate
- b) Coins
- c) Manuscripts etc.

## **Unit V. Research Opportunities**

### **References:**

1. Prachin Bharatiy Lipimala, Ozha Gaurishankar H. Munshiram Manoharlaal Publi., New Delhi, 1918, 1971
2. The Paleography of India, Ozha Gaurishankar H. Munshiram Manoharlaal Publi., New Delhi, 1918, 1971
3. Prachin Lipiyoki Kahani, Guanakar Mule, Rajakamal Publi. New Delhi., 1974
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**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC 2 A) – (2 Credits)**

**Semester III- 2) Art and Architecture of Early India**

**(From 3000 B.C. to 12<sup>th</sup> Century A.D.)**

## **Course Objectives:**

1. This paper is designed to introduce the students to the emergence and development of art and architecture in early India.
2. It will enable students to understand the process of development of art and architecture in the early Indian history on the socio-religious and economic background.
3. It will get students acquainted with the emergence and changes in the styles of the art and architecture during the early India up to the 6<sup>th</sup> century B.C.E.

## **Course Outcome:**

1. Students will get an overall understanding of the emergence and development of the art and architecture in Early India.
2. They will understand the emergence of the Pottery, Terracotta figures, Ornaments, Town Planning, preparation of seals and coins.
3. They will have an understanding of the art and architecture in early India.

## **Course Content:**

### **Unit I Pre-Mauryan and Mauryan Art and Architecture**

- a) The Indus Valley: Urban Planning, Great Bath, Seals, Dancing Girl
- b) Mauryan Period: Stupa, Ashokan Pillars, Caves, Pottery, Coins

### **Unit II Post-Mauryan Art and Architecture**

- a) Rock-Cut Architecture
- b) Stupas, Chaityas, Vihars and Temples

### **Unit III Gupta and Harsha's Times**

- a) Gandhar Style
- b) Mathura Style
- c) Temples

## Unit IV Chalukyas, Cholas, Pratihars, Pals and Rashtrakuta Times

- a) Rock-Cut Architecture: Ajanta, Ellora
- b) Temple Architecture: Nagar Style, Dravid Style.

### References:

1. Acharya, Prasanna Kumar, Ed. *An Encyclopedia of Hindu Architecture: Manasara Series, Vol, VII*, Bombay,1946.
2. Bhattacharya, Tarapada, *The Canonsof Indian Art or A Study ofVastuvidya*, Calcutta., 1963.
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**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC-2 A) – (2 Credits)**

**Semester III -3)Digital Documentation**

## **Course Objectives:**

1. This paper is designed to introduce the students to the Digital Documentation.
2. It will enable students to prepare files in various formats; to scan photos, documents and to edit videos, images.
3. It will get students acquainted with the process of online archiving.

## **Course Outcome:**

1. Students will get an overall understanding of the process of digital documentation.
2. They will learn to scan photos, documents and to edit videos, images.
3. They will be able to prepare documents in various digital formats.

## **Course Content:**

### **Unit I Digital Document Creation**

- a) File Formats and conversion
- b) Scanning any Physical Document
- c) Converting Text Image to Text File

### **Unit II Image and Video Editing**

- a) Inserting Graphs, Charts, text into image
- b) Creating Flyers, audio books
- c) Trimming Video (at any ends)
- d) Sound editing of video (to mute, add sound, Music)
- e) Visual editing of Video (lights, content, slideshows)

### **Unit III Online Archiving**

- a) Conceptual Understanding
- b) How Online Clouds work
- c) Data Security and Storage

#### **Unit IV Internal Assessments**

- a) Visiting a Historical Place and to Create a Video documentary
- b) Creating a Slideshow (with video/ audio editing) of any part of the syllabus
- c) Creating audio books of any favorite topic related to History

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## **Proposed Syllabus in History for SYBA (Credit System) form the Academic Year 2020-2021**

### **Under the Faculty of Humanities**

#### **Skill Enhancement Courses (SEC 2 A) – (2 Credits)**

#### **Semester III-4)Tourism Management**

##### **Course Objectives:**

1. This paper is designed to introduce the students to Tourism Management.
2. It will get students acquainted with all the processes of Tourism Industry to work with great potential.
3. It will enable students to seek self-employment by starting their own tourism related business.

##### **Course Outcome:**

1. Students will get an overall understanding of the process of Tourism Management.
2. They will learn to work in the Tourism Management with great potential.
3. They will be able to seek self-employment by starting their own tourism related business.

##### **Course Content:**

##### **Unit I Tourism**

- a) Definition and Nature of Tourism
- b) Important Components
- c) Topology of Tourism

##### **Unit II Tourism recent trends**

- a) Concept of Domestic and International Tourism
- b) Tourism Recent Trends.

##### **Unit III Tourism as Industry**

- a) Tourism as an Industry
- ii) Visitor, Tourist, Excursionist

##### **Unit IV Tourism in India and Impact**

- a) Growth and development of tourism in India
- b) Economics and Social impact
- c) Physical and environmental impact

##### **Unit V Filed Trip and Report Writing**

## Reference Books:

1. Beaver and Allan (2002), 'A Dictionary of Travel and Tourism Terminology', CAB International Wallingford, pp. 313.
2. Bhatia A.K. (1983), 'Tourism Development' Sterling Publishers (P) Ltd., New Delhi.
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**Under the Faculty of Humanities**

**Core Course-I (CC- 2C)**

**Semester -IV- History of the Marathas: (1707-1818)**

**Learning Objectives:**

1. To understand changed nature of Maratha Polity during the Peshwa Period.
2. To examine the dynamics of Maratha Confederacy and reciprocity.
3. To examine role of Marathas and regionality in National politics of 18th Century India.
4. To study administrative system, society and economy of the Peshawa period

**Learning Outcome:**

1. Students will be able to analyze the Marathas policy of expansionism and its consequences.
2. They will understand the role played by the Marathas in the 18th century India.
3. They will be acquainted with the art of diplomacy in the Deccan region.
4. It will help to enrich the knowledge of the administrative skills and profundity of diplomacy.

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

**Unit-I: Consolidation and Expansion of the Maratha Power** **12**

- a) Conflict between Maharani Tarabai and Chhatrapati Shahu Maharaj
- b) Rise of the Peshwas: Balaji Vishwanath-Chauthai and Sardeshmukhi
- c) Peshwa Bajirao I: South and North Expedition

**Unit-II: Strengthening of the Maratha Power** **12**

- a) Peshwa Balaji Bajirao (Nanasaheb)
- b) Third Battle of Panipat: Causes and Consequences
- c) Causes of the defeat of the Marathas

**Unit-III: Post Panipat Revival and Downfall** **12**

- a) Peshwa Madhavrao I
- b) Barbhai Council: Role of Mahadji Shinde and Nana Phadanvis
- c) Downfall of Maratha Power

- a) Maratha Confederacy
- b) Economic Condition
- c) Society: Caste System and Position of Women

**References: English**

1. Alavi, Seema (ed.), *The Eighteenth Century in India*, OUP, New Delhi, 2002
2. Ballhatchet, Kenneth, *Social Policy and Social Change in Western India, 1817 – 1830*, Oxford University Press, 1957.
3. Chandra, Satish, *The Eighteenth Century in India: Its Economy and the Role of the Marathas, the Jats, the Sikhs and the Afghans*, Kolkata, K.P. Bagchi, 1986.
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7. गर्गे स. मा., इतिहासाची साधने- एक शोधयात्रा, पॉप्युलर प्रकाशन, मुंबई
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9. चापेकर, ना. गो., पेशवाईच्या सावलीत, लक्ष्मण नारायण चापेकर, पुणे, १९३७
10. जोशी एस. एन., मराठेकालीन समाजदर्शन, अ. वि. गृह प्रकाशन, पुणे १९६०

- 11.देशमुख शारदा, शिवकालीन व पेशवेकालीन स्त्रीजीवन, टिळक महाराष्ट्र विद्यापीठ, पुणे, १९७३
- 12.सरदार गं. बा., संतवाङ्माची सामाजिक फलश्रुती, श्री विद्या प्रकाशन, पुणे, १९८२
- 13.हेरवाडकर आर. व्ही., मराठी बखर, व्हीनस प्रकाशन, मुंबई, १९८६
- 14.सरदेसाई गो.स., मराठी रियासती, खंड १ ते ८, पॉप्युलर प्रकाशन, मुंबई

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**Under the Faculty of Humanities**

**Discipline Specific Elective Course (DSE-1B)**

**Semester -IV-Medieval India: Mughal Period**

**Course objectives:**

1. Produce well researched written work that engages with both primary sources and the secondary literature.
2. To learn the Mughal ruler and incidents regarding Deccan policies.
3. To understand the analytical studies of Medieval South India
4. Maps- important centers in Mughal Empire under Akbar and Aurangzeb

**Course outcome:**

1. Draws comparisons between policies of different rulers.
2. Understanding Role of Akbar in the consolidation of Mughal rule in India.
3. Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age.
4. Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/ Tests/Quiz/Maps/Field visit/ Group Discussion/ Seminar /use of e-learning

**Unit I: Foundation of Mughal Empire** **10**

- a) Sources of Historiography of Mughal Period
- b) Babur: The Foundation of Mughals Empire
- c) Humayun Struggle with Sher Shah Suri. Sher Shah: administrative reforms

**Unit II: The Consolidation of the Mughal Empire** **18**

- a) Akbar: Extent of the Mughal Empire, Mansabdari System, Religious Policy
- b) Expansion: Deccan Policy of Jahangir and Shah Jahan
- c) The reign of Aurangzeb: Rajput Policy, Ahom conflicts, Sikh Policy, Deccan expeditions

**Unit III: Administrative systems** **10**

- a) Central and Provincial Administration
- b) Revenue System
- c) Judicial System, Military administration

#### **Unit IV: Economy, Society and Culture**

**10**

a) Economy: Agriculture, trade and industry

b) Society: Caste system, position of women, Bhakti and Sufi movement.

c) Culture: Science and Technology.

#### **Reference Books: English**

1. Banerjee A.C., New History of Medieval India, New Delhi, S.Chand & Co., New Delhi, 1990.
2. Chitnis K.N., Glimpses of Medieval Indian and Institutions, Poona, 1981.
3. Chitnis K.N., Socio-Economic History of Medieval India, Atlantic Publishers and Distributors, New Delhi, 1990.
4. Chopra P.N., Puri B.N., Das M.N.-A Social, Cultural and Economic History of India, Vol II. Macmillan India, Delhi, 1974.
5. Lane Poole Stanley, Medieval India, London, 1910
6. Majumdar R.C(ed)-The History and Culture of the Indian People, Vol VII: The Moghul Empire, Bombay, 1974.
7. Mehta J.L – Advanced Study in the History of Medieval India Vol III, New Delhi sterling Publishers, 1983.
8. Moreland W.H., From Akbar to Aurangzeb: Study in Economic History, London, 1923
9. Moreland E.H., India at the Death of Akbar: An Economic Study, London, 1920
10. Richards J.F., The Moghul Empire, Cambridge, 1994.
11. Salma Ahmed Farooqui, A Comprehensive History of Medieval India, Person, New Delhi, 2011
12. Sarkar Jadunath., Mughal Administration, Calcutta, 1963.
13. Sharna S.R., Mughal Empire in India, Agra, 1971.
14. Srivastava A. L., The Mughal Empire (1526 -1803 AD), Agra 1974
15. Mehta J.L., Advanced study in the history of medieval India, sterling Publishers Pvt.Ltd.
16. Varma Nirmala, History of India Mughal Period, ABCD Publishers.
17. Singh Meera, Medieval History of India, Vikas Publishing House Pvt.Ltd.
18. Mukhia Harbans, Perspectives on medieval history, Vikas Publishing House Pvt.Ltd.
19. Lanepule Stanley, Medieval India
20. Percy Brown - Art & Architecture, Islamic Architecture
21. Satishchandra- History of Medieval India, Orient Blackswan, Hyderabad.

**Marathi:**

1. Dr. Muhammad Ajam, Sufi Tatwadnyan : SwaproopAani Chintan, Padmagandha.
2. Siddikhi N.A., (Anu.) Dr. Saswadkar P.L., MogalkalinMahasulPaddhati, Diamond Prakashan, Pune.
3. Chitnis K.N., MadhyayginBharatiyaSankalpanava Sanstha Bhag 1 te 4, Allrich Enterprises, Mumbai
4. Kulkarni V.V., Nevaskar Ashok.,MadhyayuginBharatachaItihas A.D.1206 te 1658, Vidya Prakashan, Nagpur.
5. Jadunath Sarkar (Anu.), Kolarkar S.G., Aurangjeb, Diamond Prakashan Pune.
6. Dixit N.S., PrachinvaMadyayugin Bharat Prarambhapasunte A.D. 1707. Pimpalpure& Co. Publishers, Nagpur.
7. Phadnaik Chandrashekhar, PrachinvaMadhyayugin Bharat, Vidya Prakashan, Nagpur.
8. Banahatti Rajendra, Akbar teAurangjeb, Diamond Publication Pune.
9. Kogekar Sunanda, Akabarkalin Hindustan, Diamond Publication Pune.
10. Joshi Smita, BharatiyaItihasPrachinteArvachin, Diamond Publication Pune.
11. Bhide Gajanan, Nalavade Vijay, Naiknavare, Madhyayugin Bharat, PhadakePrakashan, Kolhapur.
12. Sardesai G.S., MusalmaniRiyasat, Popular Prakashan, Mumbai.
13. Mate M.S., Chavan Kamal, MadhyayuginKalabharati, Continental Prakashan, Pune.
14. Athaley Vibha, PrachinvaMadhyayugin Bharat.
15. Chandra Satish, Madhyayugin Bharat, Jawahar Publishers, New Delhi.
16. Dr. Kathare Anil, MadhyayuginBharatachaItihas, Prashant Publications, Jalgaon, 2013
17. Acharya Apte, Madhyayugin Bharat.

**Hindi:**

1. Irfan Habib (Sampa.), Madhyakalin Bharat, Ank 1 te 5, RajkamalPrakashan, New Delhi.
2. Irfan Habib( Sampa.), MadhyaKalin Bharat, Ank 2, RajkamalPrakashan, New Delhi.
3. Irfan Habib( Sampa.), MadhyaKalin Bharat, Ank 3, RajkamalPrakashan, New Delhi
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**Savitribai Phule Pune University, Pune**  
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**Under the Faculty of Humanities**  
**Discipline Specific Elective Course (DSE-2 B)**  
**Semester -IV-Glimpses of the Modern World - Part II**

**Learning Objectives:**

1. This paper is designed to introduce the students to the political history of the Modern World.
2. It will enable students to study remarkable historical developments in the various countries including India, which had a significant impact on almost all over the Modern World.
3. It will enable students to understand the significant impact of the modern concepts such as Dictatorship, Cold War, Nationalism, Communism, Imperialism, Polarization, etc.
4. It will get students acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.

**Learning Outcomes:**

1. It will enable students to develop the overall understanding of the Modern World.
2. The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.
3. It will enhance their overall perception of the history of the Modern World.
4. It will enable students to understand the significance of the strategic political developments in the Modern World.

**Pedagogy:**Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

**Unit I. Nationalist Movements in Asia and Africa** **12**

- a) Dr. Sun-Yet-Sen
- b) Mahatma Gandhi (Non-Cooperation Movement, Civil Disobedience

Movement, Quit India Movement)

- c) Dr. Nelson Mandela

**Unit II. Rise of Dictatorship** **12**

- a) Italy - Mussolini
- b) Germany – Hitler
- c) Turkestan - Kemal Pasha
- d) Militarism in Japan



### Unit III. World War II and the Rise of World Power

12

- a) World War II - Causes and Consequences
- b) United Nations Organization - Structure and Functions
- c) The Rise of the World Powers – U.S.A. and U.S.S.R.

### Unit IV. Cold War and Third World

12

- a) Cold War: Causes, Nature and Course
- b) Third World: Non-Alignment Movement
- c) End of the Cold War and Disintegration of U.S.S.R.

### References:

#### English

1. Carr EH, International Relations Between the Two World Wars.
2. Corwall RD: World History in the 20th Century, Longman, London, 1976.
3. Dev Arjun and Indira Dev, History of the World, Orient BlackSwan, Delhi, 2009.
4. Gooch VP, History of Modern Europe.
5. Grant and Temporally, Europe in the 19th and 20th centuries.
6. Hazen, Modern Europe
7. Jain H. and K. Mathur, A History of the Modern World 1500 - 2000 AD, Jain Prakashan Mandir, Jaipur , 2014.
8. Rao BV: World History (3rd edition) from early time to AD 2000, New Dawn Press INC, VSA UK , India , 2006.

#### मराठी

१. आचार्य धनंजय ,विसाव्या शतकातील जग ,श्री साईनाथ प्रकाशन ,नागपुर.
२. कुलकर्णी ,देशपांडे ,आधुनिक जगाचा इतिहास ,(भाग १ व २ ),स्नेहवर्धन प्रकाशन ,पुणे.
३. कुलकर्णी ,फडके ,आधुनिक युरोपचा इतिहास.
४. कोलारकर शं. गो ,आधुनिक युरोप.
५. गायकवाड ,कदम ,थोरात ,पाटील ,आधुनिक जगाचा इतिहास .
६. जोशी पी .जी ,विसाव्या शतकातील जगाचा इतिहास ,विद्या प्रकाशन ,नागपुर .
७. वैद्य सुमन ,आधुनिक जग , साईनाथ प्रकाशन ,नागपुर .
८. वैद्य सुमन,कोठेकर शांता ,आधुनिक जग , साईनाथ प्रकाशन ,नागपुर.

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**Discipline Specific Elective Course (DSE-2 B)**  
**Semester -IV- History of West Asia**

**Learning Objectives:**

1. The course is designed to enable students to understand the history of Modern East Asia.
2. It will acquaint students with the notable events in contemporary Asia.
3. It will orient students to understand the economic transition in Asia during 20<sup>th</sup> century and the impact of all this on world politics.
4. It will enable students to understand the history of West Asian countries.

**Learning Outcomes:**

1. It will enable students to develop the overall understanding of the West Asian countries.
2. The students will get acquainted with the modernization of Turkestan, Arab Nationalism and the Arab-Israel Conflict.
3. It will enhance their perception of the developmental policies of the Asian Countries.
4. It will enable students to understand the significance of the West Asian countries in the Modern World.

**Pedagogy:** Lectures/Visual presentation/ Role play/ Critical analysis/Assignments/Tests/Quiz/  
e-learning

**Unit I: Modern Turkestan.**

**12**

- a) Young Turkey Movement.
- b) Turkestan and WorldWarI
- c) Kemal Pasha and Modernization of Turkestan.

**Unit II: Israel**

**12**

- a) Zionist Movement.
- b) Balfour declaration.
- c) Rise of Israel.
- d) Arab Israel conflict.

**Unit III: Rise of Arab Nationalism.****08**

- a) General Nasser and the Suez Crises.
- b) Saudi Arabia: Wahhabi Movement and Achievements of Ibn Saud.

**Unit IV: Iran and Iraq****16**

- a) Iran: Achievement of Rezashah Pahlavi
- b) Iran and World War II
- c) Oil Diplomacy
- d) Iraq: Rise of Rashid Ali
- e) Iraq- Iran Conflict
- f) Gulf War.

**Reference -****English books**

1. Bass Claud, Asia in the Modern World.
2. Bernad L, Turkey Today, The Emergence of Modern Turkey.
3. Beasley W.G., The Modern History of Japan.
4. Buchana P.A., History of The Far East.
5. Choneaux, Jean – China – The Peoples Republic.
6. Fisher S.N., The Middle East.
7. North M., The History of Israel.

**मराठी :**

1. आंबेकर गो.वा .,आग्नेय आशियातील घडामोडी, साईनाथ प्रकाशन, नागपुर. .
2. देव प्रभाकर ,आधुनिक चीनचा इतिहास (१८४०-१९५०)विद्या प्रकाशन, नागपुर.
3. देव पुजारी ,पूर्व आशियाचा इतिहास – चीन व जपान, मंगेश प्रकाशन, नागपुर. .
4. गद्रे प्रभाकर , जपानचा इतिहासविद्या प्रकाशन, नागपुर..
5. गाठळ साहेबराव ,आग्नेय आशियाचा इतिहासतीरूपति प्रकाशन, परभणि.
6. जोशी पी .जी ,विसाव्या शतकातील जगाचा इतिहास ,विद्या प्रकाशन ,नागपुर .
7. गाठळ एस .एस – आधुनिक चीनचा इतिहास (१८४० ते १९५०) तीरूपति प्रकाशन, परभणि.

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**Under the Faculty of Humanities**

**Skill Enhancement Course (SEC 2B) – (2 Credits)**

**Semester IV- 5) Modi Script**

**Course Objectives:**

1. This paper is designed to introduce the students to the Modi Script.
2. It will get students acquainted with details of the Modi Script.
3. It will enable students to understand Maratha History in detail.

**Course Outcome:**

1. Students will get an overall understanding of the Modi Script.
2. They will be able to know the history of the Marathas.
3. They will be able to read and write in Modi Script.

**Course Content:**

**Unit.I Modi Script Introduction**

Modi Script – Writing & Reading

- i) Vowels
- ii) Consonant
- iii) Numbers

**Unit.IIA. Kalaganana –**

- i) Hindu
- ii) Muslim

**B. Anewari Reghi Hisheb**

**Unit. III Reading practice**

- i) Short Forms
- ii) Farasi words

**Unit. IV Archives&Types of Documents, Research Opportunities**

## Reference books:

1. Modi Lipi- Prashikshan va Saraavpustika, Maharashtra Purabhilekhagar Sanchalanalaya, Govt. of Maharashtra, 2007,2008, 2012
2. Prachin Bharatiy Lipimala, OzhaGaurishankar H. MunshiramManoharlaal Publi., New Delhi, 1918.
3. The Palaeography of India, OzhaGaurishankar H. MunshiramManoharlaal Publi., New Delhi,1918.
4. Mod VachanAaniLekhan ,Valinbe Ganesh R., DhavalePrakashana, Mumbai, 1951, 1953, 2005,2009
5. Bharatiya Lipinche Maulik Eakarup – Pandit GanapatishastriHebbar published by Maharashtra Rajya Sahitya Ani Sanskruti Mandal.1988
6. Chala Shikuya Modi Aapan..., Mhatre Krushnaji, Modi LipiShikshan Mandal, Mumbai, 1993, 2003,2009
7. Sahaj sopi Modi Lipi, Tilak Shreekrushna L., Vyasa creation, Thane
8. Sopi Modi Patre, Lawate Mandar & Soman Bhasvati, Adijit Pub. Pune, 2013
9. Shivachhatrapatinche Patre, Vol. I & II, Kulkarni Anuradha, Param Mitra, 2011
10. Modi Lipi , Mali Navinkumar,
11. Tumhich Modi Shika, Kulkarni M.R. , Diamond Publi, Pune

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**Proposed Syllabus in History for SYBA (Credit System) form the Academic Year 2020-2021**

**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC 2B) – (2 Credits)**

**Semester IV-6)Medieval Indian Arts and Architecture(1206 To 1857)**

## **Course Objectives:**

1. This paper is designed to introduce the students to the Art and Architecture during the Medieval India.
2. It will enable students to understand the impact of the Persia on the Mughal Art and Architecture.
3. It will get students acquainted with the development of Indo-Persian style of Painting.

## **Course Outcome:**

1. Students will get an overall understanding of the development of the Medieval Art and Architecture.
2. They will understand the changing patterns of the Art and Architecture during the Medieval India.
3. They will have an understanding of the impact of Persian Art on Islamic Art and Architecture in Medieval India.

## **Course Content:**

### **Unit I Sultanate Art & Architecture**

- a) Arcuate Technique (Arches domes)
- b) Qubbat-ul-Islam Mosque
- c) Tomb of Iltumish
- d) Qutbminar
- e) Alai Darwaza

### **Unit II Deccan Art & Architecture**

- a) Bahamani
- b) Vijaynagar (Hampi)

### **Unit III Sur Art & Architecture**

- a) Qila-i-Kuhna Mosque
- b) Tombs (Hasan Sur and Sher Shah)

### **Unit IV Mughal Art & Architecture**

- a) Akbar: The Tomb of Humayan, Agra Fort, Fatehpur Sikri, Allahabad and Lahor forts
- b) Jahangir: Sikandara, Tomb of Itmad-ud-Daula
- c) Shahjahan: The Taj Mahal, Red Fort, Jama Masjid
- d) Mughal Paintings
- e) Regional Art & Architecture

### **Reference Books:**

- 1) Percy Brown: Indian Architecture (Islamic period), Mumbai 1997
- 2) Percy Brown: Indian Painting, New Delhi, 1965
- 3) R.Nath : History of Sultanate Architecture, Delhi, 1978
- 4) Catherine B. Asher: The New Cambridge History of India, Mughal Architecture.
- 5) Satish Grover: The Architecture of India (Islamic Period) Delhi, 1981
- 6) Ebba Koch: The Mughal Architecture: An outline of its History and Development, Primus Books, Delhi, 2014
- 7) S.P. Verma : Art and Material Culture in the Paintings of Akbar's Court, Delhi 1978
- 8) K. Khandalwal : Documents on Indian Painting, Bombay 1969
- 9) M.C. Beach : The Cambridge History of India : Mughal and Rajput Paintings, Cambridge University Press 1992
- 10) Surendra Sahai : Indian Architecture, Islamic period
- 11) Z.A. Desai : Indo-Islamic Architecture, Publication Division, Ministry of Information and Broadcasting, Govt. of India, Delhi 1970
- 12) Daljeet : Mughals and Deccan Paintings, From the collection of National Museum, New Delhi 1999
- 13) Ziauddin Desai : Indo-Islamic Architecture, Delhi 1970
- 14) Subhash Parihar : Some aspect of Indo-Islamic Architecture, Delhi 1999
- 15) Abha Narain Lambah & Alka Patel : The Architecture of the Indian Sultanates, Marg publication, 2006

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**Proposed Syllabus in History for SYBA (Credit System) form the Academic Year 2020-2021**

**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC 2 B) – (2 Credits)**

**Semester IV- 7) Popular Indian Culture**

## **Course Objectives:**

1. This paper is designed to introduce the students to the Popular Culture in India.
2. It will enable students to understand Visual Arts, Performances, Audio-Visual expressions, Fairs, Festivals and Rituals.
3. It will get students acquainted with the development of Popular Indian Culture.

## **Course Outcome:**

1. Students will get an overall understanding of the the Popular Culture in India.
2. They will understand the Visual Arts, Performances, Audio-Visual expressions, Fairs, Festivals and Rituals.
3. They will have an understanding of the importance of Popular Indian Culture.

## **Course Content:**

### **Unit I Introduction:**

- a) Definition Popular Culture
- b) Popular Culture and High Culture

### **Unit II Visual Expressions and Performance:**

- a) Visual Expressions - Folk Art Calendar Art Photography
- b) Performance – Theatre, Music, Folktales, Songs, Swang and Nautanki

### **Unit III: Audio-Visual Expression:**

- a) Indian Cinema, Television and Internet
- b) Influence of National Struggle for Independence (1930s & 1940s)
- c) Idealized Nationalism (1950s)
- d) Disillusionment and Anti-Establishment Mood (1970s & 1980s)
- e) Impact on Social Media



#### **Unit IV Fairs, Festivals and Rituals:**

- a) Disentangling Mythological Stories
- b) Patronage
- c) Regional Variations

**A visit to an exhibition/fair/festival is an essential part of this course.**

#### **Reference Books:**

1. Dissanayake, W. and K.M. Gokul Singh. *Indian Popular Cinema*. London: Trentham Books, 2004.
2. Oberoi, P. *Freedom and Destiny: Gender, Family and Popular Culture in India*. Delhi, 2009.
3. Princy, C. *Camera Indica: The Social Life of Indian Photographs*. Chicago, 1998.
4. Storey, J. *Cultural Theory and Popular Culture*. London, 2001.
5. Rag, P. *Dhuno ke Yatri*, New Delhi: Rajkamal, 2006.
6. Ramanujan, A.K. *Folktales from India: A Selection of Oral Tales From Twenty-two Languages*. USA: Random House, 1997. (Introduction)
7. Ramaswamy, V. "Women and the 'Domestic' in Tamil Folk Song." In *From Myths to Markets: Essay on Gender*, edited by Kumkum Sangari and Uma Chakravarti. Shimla: Manohar and Indian Institute of Advanced Study, 1999.
8. Singh, L., ed. *Theatre in Colonial India: Playhouse of Power*. New Delhi: OUP, 2009.

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**Proposed Syllabus in History for SYBA (Credit System) form the Academic Year 2020-2021**

**Under the Faculty of Humanities**

**Skill Enhancement Courses (SEC 2 B) – (2 Credits)**

**Semester IV- 8) Travel Agency and Tour Business**

## **Course Objectives:**

1. This course is designed to create awareness about Travel Agency, Education and Job opportunities among the students.
2. It aims in training students on both Theory and Practical aspect and Travel Agency and creating professionals for tourism industry.
3. It will enable student to seek self-employment by starting their own Travel Agency related to business.

## **Course Outcome:**

1. The students will understand the details of the business of Travel Agency.
2. They will be trained on both Theory and Practical aspect and Travel Agency and creating professionals for Tourism Industry.
3. It will enable student to seek self-employment by starting their own Travel Agency related to business.

## **Course Content:**

### **Unit I. Concept of Travel Agency**

- a) Definition of travel agency
- b) Main function of travel agency
- c) Organizational Structure of a travel agency

### **Unit II. Role of Travel Agent**

- a) Types of Travel Agents
- b) Responsibilities of Travel Agent
- c) Procedure for Travel Agent and Tour Operators in India
- d) Online Travel Agency

### **Unit III. Role of Travel Agency**

- a) Role of Indian Airlines, Indian Railway
- b) Role of different Tour Companies
- c) Tour Packages and Accommodation

### **Unit IV. Field Visit and Report Writing**

#### **Reference Books:**

1. Foster D.L. The Business of travel agency Operation and tour Management
2. Merissen Jome W, Travel Agent and Tourism
3. Howel David H, Principals and Methods of Scheduling Reservations
4. J.M.S. Negi., Travel Agency & Tour Operations
5. Agarwal Surinder, Travel Agency Managements
6. Bhatia A.K, Professional Travel Agency Management
7. Bhatia A.K, Tourism Development
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**Savitribai Phule Pune University**

**Three Year Degree Course in  
B. Sc. Computer Science**

## 1) Title of the Course : B. Sc. Computer Science

### T. Y. B. Sc. Computer Science Syllabus in the Subject Computer Science (To be implemented from Academic Year 2015-16)

#### 2) Preamble:

B. Sc. Computer Science is a systematically designed three year course that prepares the student for a career in Software Industry. The syllabus of Computer Science subject along with that of the three allied subjects (Mathematics, Electronics and Statistics) forms the required basics for pursuing higher studies in Computer Science. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

#### 3) Introduction:

At **first year of under-graduation** basic foundation of two important skills required for software development is laid. A course in programming and a course in database fundamentals forms the preliminary skill set for solving computational problems. Simultaneously two practical courses are designed to supplement the theoretical training. The second practical course also includes a preliminary preparation for website designing in the form of HTML programming.

Along with Computer Science two theories and one practical course each in Statistics, Mathematics and Electronics help in building a strong foundation.

At **second year under-graduation**: The programming skills are further strengthened by a course in Data structures and Object oriented programming. The advanced topics in Databases and preliminary software engineering form the second course. Two practical courses alongside help in hands-on training. Students also undertake a mini project using software engineering principles to solve a real world problem. Simultaneously two theories and one practical course each in Mathematics and Electronics help in strengthening problem solving abilities.

At **third year under-graduation**: Six theory papers in each semester and practical courses cover the entire spectrum of topics necessary to build knowledge base and requisite skill set. Third practical course also includes project work which gives students hands on experience in solving a real world problem.

#### Objectives:

- To develop problem solving abilities using a computer
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To imbibe quality software development practices.
- To create awareness about process and product standards
- To train students in professional skills related to Software Industry.
- To prepare necessary knowledge base for research and development in Computer Science
- To help students build-up a successful career in Computer Science

#### 4) Eligibility:

Higher Secondary School Certificate (10+2) Science with Mathematics or its equivalent Examination as per Savitribai Phule Pune University eligibility norms.

**Note:** Admissions will be given as per the selection procedure / policies adopted by the respective college, in accordance with conditions laid down by Savitribai Phule Pune University. Reservation and relaxation will be as per the Government rules.

**5 A) Examination Pattern:****First Year B. Sc. Computer Science****Subject : Computer Science**

Pattern of Examination: Annual for both Theory and Practical Courses

Paper/ Course No.	Title	Total Number of lectures/practicals per Term	Standard of passing		
			Internal marks out of 20	External marks out of 80	Total marks out of 100
Computer Science Paper I (CS-101)	Problem Solving Using Computers and 'C' Programmin g	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Paper II CS-102)	File Organizatio n and Fundament al of Databases	Three lectures/Week (Total 80 lectures )	08	32	40 *
Computer Science Practical Paper I (CS-103)	Computer Science Practical Paper I	25 Practical slots of 4 lectures each	08	32	40 *
Computer Science Practical Paper II (CS-104)	Computer Science Practical Paper II	25 Practical slots of 4 lectures each	08	32	40 *

\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory (100 + 100 ) = 200 marks
2. Total marks per year 200 (Theory) + 100 marks (practical)+ Grade(practical) = 300 marks +Grade
3. Internal marks for theory papers given on the basis of internal assessment tests and for practicals on continuous assessment of lab work.
4. In case of Computer Science Practical Paper II, marks out of 100 will be converted to grades

Marks	Grade
75 And Above	O
65 And Above	A
55 and above	B
50 And above	C

45 And Above	D
40 And Above	E
Below 40 ( indicates Failure)	F

**Theory examination** will be of three hours duration for each theory course. There shall be 5 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	8 sub-questions, each of 2 marks; answerable in 2 -3 lines and based on entire syllabus
Question 2, 3 ,4 and 5	4 out of 5/6– short answer type questions; answerable in 8 – 10 lines mix of theory and problems

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain). There shall be 20 questions. Practical: Continuous assessment of Lab work and mini project.

**Practical Examination:** Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of 3 hours duration for each practical course. Certified journal is compulsory to appear for practical examination. There shall be two expert and two examiners per batch for the practical examination.

**Second Year B. Sc. (Computer Science)**  
**Subject : Computer Science**

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-211:Data Structures using 'C'	CS-221:Object Oriented Concepts using C++
2	Computer Science Paper II	CS-212: Relational Database Management System	CS-222:Software Engineering
3	Computer Science Paper III	CS-223:Data structures Practicals and C++ Practicals	
4	Computer Science Paper IV	CS-224:Database Practicals & Mini Project using Software Engineering techniques	

**Pattern of examination: Semester**

Theory courses (Sem I: CS-211 and CS212): Semester  
(Sem II: CS-221 and CS-222): Semester  
Practical Course (CS-223 and CS-224): Annual

Paper/Course No.	Title	Total Number of Lectures/Practicals Per Week	Standard Of Passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100



					(practicals)
Theory Paper I (CS-211)	Data Structures using 'C'	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper II (CS-212)	Relational Database Management System	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper I (CS-221)	Object Oriented Concepts using C++	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Theory Paper II (CS-222)	Software Engineering	Four Lectures/per Week (Total 48 per Semester)	04	16	20*
Practical paper I (CS 223) (First & Second Semester)	Data structures Practicals and C++ Practicals	Practicals of 4 lectures each 25 practicals / year)	08	32	40*
Practical paper II (CS 224) (First & Second Semester)	Database Practicals & Mini Project using Software Engineering techniques	Practicals of 4 lectures each 25 practicals / year)	08	32	40**

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 + 50 ) = 100 marks

2. Total marks per year 200 (Theory) + 100 marks (practicals)+Grade(practical) = 300 marks+Grade

3. Internal marks for theory papers given on the basis of Continuous internal Assessment

**Theory examination** will be of two hours duration for each theory course. There

shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 sub-questions, each of 1 mark; answerable in 2 -3 lines and based on entire syllabus	10 Marks
Question 2, 3	Sub-questions carrying 5 marks (2 out of 3)	10 Marks
Question 4	Sub-questions carrying marks depending on their complexity with options	10 Marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Continuous assessment of practical performance should be using a Lab Book specifically designed for the purpose. Certified Lab book is compulsory to appear for practical examination. There is no need of attaching program printouts to the Lab Book. There shall be two experts and two examiners per batch for the practical examination. One of the examiners will be external.

### Third Year B. Sc. (Computer Science)

No	Paper	Title: Semester I	Title: Semester II
1	Computer Science Paper I	CS-331: System Programming	CS-341: Operating System
2	Computer Science Paper II	CS-332: Theoretical Computer Science	CS-342: Compiler Construction
3	Computer Science Paper III	CS-333: Computer Networks-I	CS-343: Computer Networks-II
4	Computer Science Paper IV	CS-334: Internet Programming- I	CS-344: Internet Programming- II
5	Computer Science Paper V	CS-335: Programming in Java-I	CS-345: Programming in Java-II
6	Computer Science Paper VI	CS-336: Object Oriented Software Engineering	CS-346: Computer Graphics
7	Computer Science Paper VII	CS-347: Practicals Based on CS-331 and CS341 – Sem I & Sem II	
8	Computer Science Paper VIII	CS-348: Practicals Based on CS-335 and CS-344 – Sem I & Sem II and Computer Graphics using Java	
9	Computer Science Paper IX	CS-349: Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	

Pattern of examination: Semester

Theory courses:

(Sem III: CS-331-CS-336): Semester (Sem IV: CS-341-CS-346): Semester

Practical Course:

(CS-347-CS-349): Annual

Theory Papers					
Paper/Course No.	Title	Total Number of Lectures/Practicals Per Week	Standard Of Passing		
			Internal marks out of 10 (theory) Out of 20 (practicals)	External marks out of 40 (theory) Out of 80 (practicals)	Total passing marks out of 50 (theory) and out of 100 (practicals)
<b>SEM III</b>					
Theory Paper I (CS-331)	System Programming	48	04	16	20*
Theory Paper II (CS-332)	Theoretical Computer Science	48	04	16	20*
Theory Paper III (CS-333)	Computer Networks-I	48	04	16	20*
Theory Paper IV (CS-334)	Internet Programming I	48	04	16	20*
Theory Paper V (CS-335)	Programming in Java-I	48	04	16	20*
Theory Paper V (CS-336)	Object Oriented Software Engineering	48	04	16	20*
<b>SEM IV</b>					
Theory Paper I (CS-341)	Operating System	48	04	16	20*
Theory Paper II (CS-342)	Compiler Construction	48	04	16	20*
Theory Paper III (CS-343)	Computer Networks-II	48	04	16	20*
Theory Paper IV (CS-344)	Internet Programming II	48	04	16	20*
Theory Paper V	Programmin				

(CS-345)	g in Java-II	48	04	16	20*
Theory Paper V (CS-346)	Computer Graphics	48	04	16	20*
Practical Papers					
Practical paper I CS 347 (Semester III & IV)	Practicals Based on CS-331 and CS-341 – Sem I & Sem II	Practicals of 4 lectures each 25 practicals / year)	08	32	40**
Practical paper II CS 348 (Semester III & IV)	CS-348:Practicals Based on CS-335 and CS-345 – Sem I & Sem II and Computer Graphics using OpenGL	Practicals of 4 lectures each 25 practicals / year)	08	32	40**
Practical paper I CS 349 (Semester III & IV)	CS-349:Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project	Practicals of 4 lectures each 25 practicals / year)	08	32	40**

\* Subject to compulsory passing in external examination and getting minimum 20 marks out of 50

\*\* Subject to compulsory passing in external examination and getting minimum 40 marks out of 100

Notes:

1. Total marks: Theory for each semester (50 x 6 ) = 300 marks
2. Total marks per year 600 (Theory) + 300 marks (practicals) = 900 marks
3. Internal marks for theory papers given on the basis of continuous internal assessment

**Theory examination** will be of two hours duration for each theory course. There shall be 4 questions carrying equal marks. The pattern of question papers shall be:

**Theory examination** will be of two hours duration for each theory course. There

shall be 4 questions carrying equal marks. The pattern of question papers shall be:

Question 1	10 sub-questions, each of 1 mark; answerable in 2 -3 lines and based on entire syllabus	10 Marks
Question 2, 3	Sub-questions carrying 5 marks (2 out of 3)	10 Marks
Question 4	Sub-questions carrying marks depending on their complexity with options	10 Marks

**Internal examination:** Internal assessment of the student by respective teacher will be based on written test, 10 marks each Semester. The written test shall comprise of objective type questions – Multiple Type Questions, True / False, Definitions, Answer in Two or three line question (Describe/Explain) There shall be 20 questions.

Practicals: Continuous assessment of practical performance

**Practical Examination:** Practical examination shall be conducted at the respective college at the end of the academic year. Practical examination will be of 3 hours duration. Continuous assessment of practical performance should be using a Lab Book specifically designed for the purpose. Certified Lab book is compulsory to appear for practical examination. There shall be one expert and two examiners per batch for the practical examination. One of the examiners will be external.

**5 B) Standard of Passing:**

i. In order to pass in the first year theory examination, the candidate has to obtain 40 marks out of 100 in each course. (Minimum 32 marks out of 80 must be obtained in the University Theory Examination.)

ii. In order to pass in the Second Year and Third Year theory examination, the candidate has to obtain 20 marks out of 50 in each course of each semester.

**5 C) ATKT Rules:**

While going from F.Y.B.Sc. to S.Y.B.Sc. at least 8 courses (out of total 13) should be passed; however all F.Y.B.Sc. courses should be passed while going to T.Y.B.Sc. While going from S.Y.B.Sc. to T.Y.B.Sc., at least 12 courses (out of 22) should be passed (Practical Course at S.Y.B.Sc. will be equivalent to 2 courses).

**5 D) Award of Class:**

The class will be awarded to the student on the aggregate marks obtained during the second and third year in the principal subject only. The award of the class shall be as follows:

1	Aggregate 70% and above	First Class with Distinction
2	Aggregate 60% and more but less than 70%	First Class
3	Aggregate 55% and more but less than 60%	Higher Second Class
4	Aggregate 50% and more but less than 55%	Second Class
5	Aggregate 40% and more but less than 50%	Pass Class
6	Below 40%	Fail

**5 E) External Students:** There shall be no external students.

**5 F) Setting question papers:**

**F.Y.B.Sc.:** For theory papers I and II annual question papers shall be set by the University of Pune and assessment done at the respective colleges. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers, the Question paper slips will be provided by the University of Pune and assessment done at the respective colleges.

**S.Y.B.Sc. and T.Y.B.Sc.:** For theory papers I and II for each semester and also for the annual practical examination question papers set by the University of Pune.

Centralized assessment for theory papers done as per the University instructions. Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. For Practical Papers: Papers shall be set by the University of Pune and assessment done by the internal examiner and external examiner appointed by University of Pune.

**5G) Verification and Revaluation Rules:**

As per university Statues and rules for verification and revaluation of marks in stipulated time after declaration of the semester examination result.

**6) Course Structure:**

**Duration:** The duration of B.Sc. Computer Science Degree Program shall be three years.

**a) All are Compulsory Papers:**

F.Y.B.Sc. : 2 Theory + 2 Practical (Annual)

S .Y.B.Sc.: 2 Theory per semester + 2 Practical (Annual)

T.Y.B.Sc.: 6 Theory per semester + 3 Practical (Annual)

**b) Question Papers :**

**F.Y.B.Sc. Theory paper:**

University Examination – 80 marks (at the end of 2nd term)

Internal Examination – 20 marks

**S.Y / T.Y. - B.Sc.Theory paper:**

University Examination – 40 marks (at the end of each term)

Internal Examination – 10 marks

**F.Y. / S.Y / T.Y. - B.Sc. Practical Paper:**

University Examination – 80 marks (at the end of 2nd term)

Internal Examination – 20 marks

**c) Medium of Instruction:** The medium of instruction for the course shall be **English.**

**7) Equivalence of Previous Syllabus:**

<b>Old Course (2008 Pattern)</b>	<b>New Course (2013 Pattern)</b>
CS 331: System Programming & Operating System I	CS 331 : System Programming
CS 341: System Programming & Operating System II	CS 341 : Operating System
CS 332 : Theoretical Computer Science & Compiler Construction I	CS 332 : Theoretical Computer Science
CS 342 : Theoretical Computer Science & Compiler Construction II	CS 342 : Compiler Construction
CS 333 :Computer Networks I	CS 333 :Computer Networks I
CS 343 :Computer Networks II	CS 343 :Computer Networks II
CS 334 :Web development and PHP programming I	CS 334 :Internet Programming I
CS 344 : Web development and PHP programming II	CS 344 :Internet Programming II
CS 335 :Programming in Java I	CS 335 :Programming in Java I
CS 345 :Programming in Java II	CS 345 :Programming in Java II
CS 336 :Object Oriented Software Engineering	CS 336 :Object Oriented Software Engineering

CS 346 :Business Applications	CS 346 :Computer Graphics
CS 347: Lab Course I	CS 347: Lab Course I
CS 348:Lab Course II	CS 348:Lab Course II
CS 349: Lab Course III	CS 349: Lab Course III

**8) University Terms:** Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 75 percent attendance at theory and practical course and satisfactory performance during the term.

**9) Qualification of Teachers:** M.Sc. Computer Science/M.C.A. or equivalent master degree in science with class/grades and NET/SET as per prevailing University/Government /UGC rules.

**10) Detail Syllabus with Recommended Books:**

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Systems Programming**  
**Code No. : CS-331**

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**Semester III**

**Total Lectures : 48**

**Aim :** To understand the design and implementation issues of System programs that play an important role in program development.

**Objectives :**

- To understand the design structure of a simple editor.
- To understand the design structure of Assembler and macro processor for an hypothetical simulated computer.
- To understand the working of linkers and loaders and other development utilities.
- To understand Complexity of Operating system as a software.

**1. Introduction**

**[4]**

- 1.1. Types of program – System program and Application program.
- 1.2. Difference between system programming and application programming.
- 1.3. Elements of Programming environment - Editor, Preprocessor, Assembler, Compiler, Interpreter, Linker and Loader, Debugger, Device drivers, Operating System.
- 1.4. Simulation of simple computer smac0 (hypothetical computer) -Memory, Registers, Condition Codes, Instruction format, Instruction Set, smac0 programs.

**2. Editors**

**[2]**

- 2.1 Definition, need/purpose of editor.
- 2.2 Types of editor- Examples ed, sed, VIM & emacs
- 2.3 Structure of editor

**3. Assembler**

**[10]**

- 3.1 Definition.
- 3.2 Features of assembly language, advantages
- 3.3 Statement format, types of statements – Imperative, Declarative, Assembler Directive.
- 3.4 Constants and Literals.
- 3.5 Advanced assembler directives (LTORG, ORIGIN, EQU),
- 3.6 Design of assembler – Analysis Phase and Synthesis Phase.
- 3.7 Overview of assembling process
- 3.8 Pass Structure of Assembler – One pass, Two pass assembler.
- 3.9 Problems of 1-pass assembler - forward reference, efficiency, Table of Incomplete Instructions.
- 3.10 Design of 2-pass Assembler – Pass-I and Pass-II
- 3.11 Data structure of 2-pass assembler.
- 3.12. Intermediate Code – Need, Forms-variant I and Variant II

**4. Macros and Macro Processors**

**[10]**

- 4.1 Definition
- 4.2 Macro definition and call
- 4.3 Macro expansion – positional and keyword parameters
- 4.4 Design of Data structures to be used for Macro definition and use
- 4.5 Nested macro calls
- 4.6 Advanced macro facilities – alteration of flow of control during expansion, expansion time variable, conditional expansion, expansion time loops. (with examples)
- 4.7 Design of macro preprocessor – Design overview, data structure, processing of macro definition and macro expansion (Except algorithms)



4.8 Macro assembler – Comparison of macro preprocessor and macro assembler. Pass structure of macro assembler.

**5. Compiler Design options** [2]

5.1 Interpreter - Use of interpreter, definition, Comparison with compiler, Overview of interpretation, Pure and impure interpreter.

5.2 P-code compiler

**6. Linker and Loader** [6]

6.1 Introduction

6.2 Concept of bindings, static and dynamic binding, translated, linked and load time addresses.

6.3 Relocation and linking concept – program relocation, performing relocation, public and external references, linking, binary program, object module.

6.4 Relocatability - nonrelocatable, relocatable, and self relocating programs (no algorithms), Linking for Overlays.

6.5 Object file formats: a.out, ELF, COFF, EXE, PE and COM

**7. Debuggers & Development utilities** [6]

7.1 Debugging functions and capabilities

7.2 Types of debuggers: visual & console -Case study of ddd(visual ) and gdb(console)

7.3 Development utilities on UNIX/Linux strip, make, nm, objdump, intermediate files in compilation process etc.

**8. Operating System as System Software** [6]

8.1 What Operating Systems Do – User View, System View, Defining OS

8.2 Computer System Architecture – Single processor system, Multiprocessor systems, Clustered Systems

8.3 Operating System Operations – Dual mode operation, Timer

8.4 Process Management

8.5 Memory Management

8.6 Storage Management – File system management, Mass storage management, Caching, I/O systems

8.7 Protection and Security

8.8 Distributed Systems

8.9 Special Purpose System – Real time embedded systems, Multimedia systems, Handheld systems,

8.10 Computer Environment – Traditional computing, Client server computing, Peer to peer Computing

**9. System Structure** [2]

9.1 Operating System Services

9.2 User Operating-System Interface – Command interpreter, GUI

9.3 System Calls

9.4 Types of System Calls – Process control, File management, Device management, Information maintenance, Communication, Protection

**Reference Books:**

1. Systems Programming and Operating Systems by D.M.Dhamdhare (Second Revised Edition). [Chapters: 2, 3, 4, 5, 7]

2. System Software - An introduction to Systems Programming - Leland L. Beck (Pearson Education) [ Chapter: 1]

3. Linkers and Loaders – John R. Levine, Elsevier Morgan Kaufmann[chapter 6]

4. Operating System Concepts - Siberchatz, Galvin, Gagne (8th Edition).[chapter 8, 9]

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Operating Systems**  
**Code No. : CS-341**

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**Semester IV**

**Total Lectures : 48**

**Aim :** To understand the design and implementation issues of Operating System.

Objectives :

- To understand design issues related to process management and various related algorithms
- To understand design issues related to memory management and various related algorithms
- To understand design issues related to File management and various related algorithms

**1. Introduction** **[2]**

- 1.1 Operating System Structure – Simple structure, Layered approach, Micro kernels, Modules
- 1.2 Virtual Machines – Introduction, Benefits
- 1.3 System Boot

**2. Process Management** **[4]**

- 2.1 Process Concept – The process, Process states, Process control block.
- 2.2 Process Scheduling – Scheduling queues, Schedulers, context switch
- 2.3 Operations on Process – Process creation with program using fork(), Process termination
- 2.4 Interprocess Communication – Shared memory system, Message passing systems.

**3. Multithreaded Programming** **[2]**

- 3.1 Overview
- 3.2 Multithreading Models

**4. Process Scheduling** **[8]**

- 4.1 Basic Concept – CPU-I/O burst cycle, CPU scheduler, Preemptive scheduling, Dispatcher
- 4.2 Scheduling Criteria
- 4.3 Scheduling Algorithms – FCFS, SJF, Priority scheduling, Round-robin scheduling, Multiple queue scheduling, Multilevel feedback queue scheduling
- 4.4 Thread Scheduling

**5. Process Synchronization** **[6]**

- 5.1 Background
- 5.2 Critical Section Problem
- 5.3 Semaphores: Usage, Implementation
- 5.4 Classic Problems of Synchronization – The bounded buffer problem, The reader writer problem, The dining philosopher problem

**6. Deadlocks** **[8]**

- 6.1 System model
- 6.2 Deadlock Characterization – Necessary conditions, Resource allocation graph
- 6.3 Deadlock Prevention
- 6.4 Deadlock Avoidance - Safe state, Resource allocation graph algorithm, Banker's Algorithm
- 6.5 Deadlock Detection
- 6.6 Recovery from Deadlock – Process termination, Resource preemption

**7. Memory Management** **[11]**

- 7.1. Background – Basic hardware, Address binding, Logical versus physical address space, Dynamic loading, Dynamic linking and shared libraries

7.2 Swapping

7.3 Contiguous Memory Allocation – Memory mapping and protection, Memory allocation, Fragmentation

7.4 Paging – Basic Method, Hardware support, Protection, Shared Pages

7.5 Segmentation – Basic concept, Hardware

7.6 Virtual Memory Management – Background, Demand paging, Performance of demand paging, Page replacement – FIFO, OPT, LRU, Second chance page replacement

## **8. File System**

[7]

8.1 File concept

8.2 Access Methods – Sequential, Direct, Other access methods

8.3 Directory and Disk Structure – Storage structure, Directory overview, Single level directory, Two level directory, Tree structure directory, Acyclic graph directory, General graph directory

8.4 Allocation Methods – Contiguous allocation, Linked allocation, Indexed allocation

8.5 Free Space Management – Bit vector, Linked list, Grouping, Counting, Space maps

### **Reference Books:**

1. Operating System Concepts - Silberchatz, Galvin, Gagne (8th Edition).

2. Operating Systems : Principles and Design – Pabitra Pal Choudhary (PHI Learning Private Limited)

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**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Theoretical Computer Science**  
**Code No. : CS-332**

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**Semester III**

**Total Lectures : 48**

**Aim:**

To have a introductory knowledge of automata, formal language theory and computability.

**Objectives:**

- To have an understanding of finite state and pushdown automata.
- To have a knowledge of regular languages and context free languages.
- To know the relation between regular language, context free language and corresponding recognizers.
- To study the Turing machine and classes of problems.

**Prerequisite:**

- Sets, Operations on sets, Finite & infinite sets Formal Language
- Relation, Equivalence Relation,(reflexive, transitive and symmetric closures)

**1. Introduction**

**[3]**

1.1 Symbol, Alphabet, String, Prefix & Suffix of Strings, Formal Language, Operations on Languages.

1.2 Regular Expressions (RE) : Definition & Example

1.3 Regular Expressions Identities.

**2. Finite Automata**

**[12]**

2.1 Deterministic finite Automaton – Definition, DFA as language recognizer, DFA as a pattern recognizer.

2.2 Nondeterministic finite automaton – Definition and Examples.

2.3 NFA TO DFA : Method (From Book 4)

2.4 NFA with  $\epsilon$ - transitions Definition and Examples.

2.5 NFA with  $\epsilon$ -Transitions to DFA & Examples

2.6 Finite automaton with output – Mealy and Moore machine, Definition and Examples.

2.7 Minimization of DFA, Algorithm & Problem using Table Method.

**3. Regular Languages**

**[5]**

3.1 Regular language-Definition and Examples.

3.2 Conversion of RE To FA-Examples.

3.3 Pumping lemma for regular languages and applications.

3.4 Closure properties of regular Languages

(Union, Concatenation, Complement, Intersection and Kleene closure)

**4. Context Free Grammar and Languages**

**[12]**

4.1 Grammar - Definition and Examples.

4.2 Derivation-Reduction - Definition and Examples.

4.3 Chomsky Hierarchy.

4.4 CFG : Definition & Examples. LMD, RMD, Parse Tree

4.5 Ambiguous Grammar : Concept & Examples.

4.6 Simplification of CFG :

4.6.1 Removing Useless Symbols,

4.6.2 Removing unit productions

4.6.3 Removing  $\epsilon$  productions & Nullable symbols

4.7 Normal Forms :

4.7.1 Chomsky Normal Form (CNF) Method & Problem

- 4.7.2 Greibach Normal form (GNF) Method & Problem
- 4.8 Regular Grammar : Definition.
  - 4.8.1 Left linear and Right Linear Grammar-Definition and Example.
  - 4.8.2 Equivalence of FA & Regular Grammar
    - 4.8.2.1 Construction of regular grammar equivalent to a given DFA
    - 4.8.2.2 Construction of a FA from the given right linear grammar
- 4.9 Closure Properties of CFL's(Union, concatenation and Kleen closure) Method and examples

## **5. Push Down Automaton**

[6]

- 5.1 Definition of PDA and examples
- 5.2 Construction of PDA using empty stack and final State method : Examples using stack method
- 5.3 Definition DPDA & NPDA, their correlation and Examples of NPDA
- 5.4 CFG (in GNF) to PDA : Method and examples

## **6. Turing Machine**

[10]

- 6.1 The Turing Machine Model and Definition of TM
- 6.2 Design of Turing Machines
- 6.3 Problems on language recognizers.
- 6.4 Language accepted by TM
- 6.5 Types of Turing Machines(Multitrack TM,Two way TM, Multitape TM,Non-deterministic TM)
- 6.6 Introduction to LBA (Basic Model) &CSG.( Without Problems)
- 6.7 Computing TM, Enumerating TM, Universal TM
- 6.8 Recursive Languages
  - 6.5.1. Recursive and Recursively enumerable Languages.
  - 6.5.2. Difference between recursive and recursively enumerable language.
- 6.9 Turing Machine Limitations
- 6.10 Decision Problem, Undecidable Problem, Halting Problem of TM

### **References :-**

- 1 Introduction to Automata theory, Languages and computation By John E. Hopcroft and Jeffrey Ullman – Narosa Publishing House.
2. Introduction to Automata theory, Languages and computation By John Hopcroft, Rajeev Motwani and Jeffrey Ullman –Third edition Pearson Education
3. Introduction to Computer Theory Daniel I. A. Cohen – 2<sup>nd</sup> edition – John Wiley & Sons
4. Theory of Computer Science (Automata, Language & Computation) K. L. P. Mishra & N. Chandrasekaran, PHI Second Edition
5. Introduction to Languages and The Theory of Computation John C. Martin TMH, Second Edition

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**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Compiler Construction**  
**Code No. : CS-342**

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**Semester IV**

**Total Lectures : 48**

**Aim :**

To understand the various phases of a compiler and to develop skills in designing a compiler

**Objective :**

- To understand design issues of a lexical analyzer and use of Lex tool
- To understand design issues of a parser and use of Yacc tool
- To understand issues related to memory allocation
- To understand and design code generation schemes

**1. Introduction**

[5]

- 1.1 Definition of Compiler, Aspects of compilation.
- 1.2 The structure of Compiler.
- 1.3 Phases of Compiler – Lexical Analysis, Syntax Analysis, Semantic Analysis, Intermediate Code generation, code optimization, code generation.
- 1.4 Error Handling
- 1.5 Introduction to one pass & Multipass compilers, cross compiler, Bootstrapping.

**2. Lexical Analysis(Scanner)**

[5]

- 2.1 Review of Finite automata as a lexical analyzer,
- 2.2 Applications of Regular Expressions and Finite Automata ( lexical analyzer, searching using RE), Input buffering, Recognition of tokens
- 2.3 LEX: A Lexical analyzer generator (Simple Lex Program)

**3. Syntax Analysis(Parser)**

[20]

- 3.1 Definition , Types of Parsers
- 3.2 Top-Down Parser –
  - 3.2.1 Top-Down Parsing with Backtracking: Method & Problems
  - 3.2.2 Drawbacks of Top-Down parsing with backtracking,
  - 3.2.3 Elimination of Left Recursion(direct & indirect)
  - 3.2.4 Need for Left Factoring & examples
- 3.3 Recursive Descent Parsing : Definition
  - 3.3.1 Implementation of Recursive Descent Parser Using Recursive Procedures
- 3.4 Predictive [LL(1)]Parser(Definition, Model)
  - 3.4.1 Implementation of Predictive Parser[LL(1)]
  - 3.4.2 FIRST & FOLLOW
  - 3.4.3 Construction of LL(1) Parsing Table
  - 3.4.4 Parsing of a String using LL(1) Table
- 3.5 Bottom-Up Parsers
- 3.6 Operator Precedence Parser -Basic Concepts
  - 3.6.1 Operator Precedence Relations form Associativity & Precedence
  - 3.6.2 Operator Precedence Grammar
  - 3.6.3 Algorithm for LEADING & TRAILING(with ex.)
  - 3.6.4 Algorithm for Operator Precedence Parsing (with ex.)
  - 3.6.5 Precedence Functions
- 3.7 Shift Reduce Parser
  - 3.7.1 Reduction, Handle, Handle Pruning
  - 3.7.2 Stack Implementation of Shift Reduce Parser ( with examples)

- 3.8 LR Parser
  - 3.8.1 Model
  - 3.8.2 Types [SLR(1), Canonical LR, LALR] Method & examples.
- 3.9 YACC (from Book 3) –program sections, simple YACC program for expression evaluation

#### **4. Syntax Directed Definition [8]**

- 4.1 Syntax Directed Definitions(SDD)
  - 4.1.1 Inherited & Synthesized Attributes
  - 4.1.2 Evaluating an SDD at the nodes of a Parse Tree, Example
- 4.2 Evaluation Orders for SDD's
  - 4.2.1 Dependency Graph
  - 4.2.2 Ordering the Evaluation of Attributes
  - 4.2.3 S-Attributed Definition
  - 4.2.4 L-Attributed Definition
- 4.3 Application of SDT
  - 4.3.1 Construction of syntax trees,
  - 4.3.2 The Structure of a Type
- 4.4 Translation Schemes
  - 4.4.1 Definition, Postfix Translation Scheme

#### **5. Memory Allocation [2]**

- 5.1 Memory allocation – static and dynamic memory allocation,
- 5.2 Memory allocation in block structure languages, Array allocation and access.

#### **6. Code Generation and Optimization [8]**

- 6.1 Compilation of expression –
  - 6.1.1 Concepts of operand descriptors and register descriptors with example.
  - 6.1.2 Intermediate code for expressions – postfix notations,
  - 6.1.3 triples and quadruples, expression trees.
- 6.2 Code Optimization – Optimizing transformations – compile time evaluation, elimination of common sub expressions, dead code elimination, frequency reduction, strength reduction
- 6.3 Three address code
  - 6.3.1 DAG for Three address code
  - 6.3.2 The Value-number method for constructing DAG's.
- 6.4 Definition of basic block, Basic blocks And flow graphs
- 6.5 Directed acyclic graph (DAG) representation of basic block
- 6.6 Issues in design of code generator

#### **References :-**

1. Compilers: Principles, Techniques, and Tools ,Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman
2. Principles of Compiler Design By : Alfred V. Aho, Jeffrey D. Ullman (Narosa Publication House)
3. LEX & YACC (O'reilly Publication)

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**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Computer Networks -I**  
**Code No. : CS-333**

**Semester III**

**Total Lectures : 48**

Pre-requisites: Basics of computer, Knowledge of ‘C’ for assignment.

Objectives: This course will prepare students in Basic networking concepts.

1. Understand different types of networks, various topologies and application of networks.
2. Understand types of addresses, data communication.
3. Understand the concept of networking models, protocols, functionality of each layer.
4. Learn basic networking hardware and tools.

Ch.No.	Name of Chapter	Reference Book
<b>1</b>	<b>Chapter 1 Introduction to Computer Networks</b>	<b>[Lectures 8]</b>
1.1	Computer Networks- Goals and applications – Business Application , Home Application, Mobile User, Social Issues	Book 1 CH1 (Pg. No.3 -14)
1.2	Network Hardware - Broadcast and point-to-point	Book 1 CH1 (Pg. No.14-16)
1.3	topologies – star, bus, mesh, ring etc.	Book 2 CH1 (Pg. No. 9-13)
1.4	Network Types-LAN, MAN, WAN, Wireless Networks, Home Networks, Internetwork	Book 1 CH1 (Pg. No.16-26)
1.5	Data Communication-Definition, components, data representation, Data Flow	Book 2 CH1 (Pg. No. 3-7)
1.6	Protocols & Standards De facto and De jure standard,	Book 2 CH1 (Pg. No. 19-20)
1.7	Network Software - Protocol Hierarchies -layers, protocols, peers, interfaces Network architecture, protocol stack, Design issues of the layers –addressing, error control, flow control, multiplexing and demultiplexing, routing Connection-oriented and connectionless service, Service Primitives – listen, connect, receive, send, disconnect and Berkley Socket ,the relationships of services to protocols.	Book 1 CH1 (Pg. No.26-37)
2.	Network Models	[Lectures 5]
2.1	OSI Reference Model - Functionality of each layer	Book 2 CH2 (Pg. No 29-42)



2.2	TCP/IP Reference Model, Comparison of OSI and TCP/IP model	Book 1 CH1 (Pg. No. 41-46)
2.3	TCP/IP Protocol Suite	Book 2 CH2 (Pg. No. 42-45)
2.4	Addressing - Physical, Logical and Port addresses (No examples)	Book 2 CH2 (Pg. No.45-50)
3.	Transmission Media	[Lectures 5]
3.1	Twisted pair cable – UTP Vs STP, categories connectors & applications , Coaxial cable – standards, connectors & applications Fiber Optic cable – propagation modes, connectors & applications(No diagrams will be asked in examination)	Book 2 CH7 (Pg. No.192,193, 195-202)
3.2	Unguided Media – Wireless- Radio Waves,- Microwaves, Infrared	Book 2 CH7 (Pg. No. 203-208)
3.3	Light wave transmission	Book 1 CH2 (Pg. No. 107-108)
3.4	Types of cabling and Networking Tool - CAT5 and CAT6 Cable Color Code, Crossover Cabling and Straight Through Cable, Crimping and Line testing tool	Book 3
4.	The Physical Layer	[Lectures 14]
4.1	Analog and Digital data, Analog and Digital signals, Periodic & Non-periodic signals Digital Signals- Bit rate, bit length, baseband Transmission (no cases)	Book 2 CH3 (Pg. No. 57-58) Book 2 CH3 (Pg. No. 71-75)
4.2	Transmission Impairments –attenuation, distortion and noise, Data Rate Limits – Noiseless channel: Nyquist’s bit rate,noisy channel : Shannon’s law (Enough problems should be covered on every topic.)	Book 2 CH3 (Pg. No. 80-88)
4.3	Performance of the Network Bandwidth, Throughput, Latency(Delay), Bandwidth –Delay Product, Jitter	Book 2 CH3 (Pg. No. 89-94)
4.4	Line Coding Characteristics, Line Coding Schemes – Unipolar - NRZ, Polar-NRZ-I, NRZ-L, RZ, Manchester and Differential Manchester (Enough problems should be covered on every topic.)	Book 2 CH4 (Pg. No. 101-109)
4.5	Transmission Modes, Parallel Transmission and Serial Transmission –Asynchronous and Synchronous and Isochronous	Book 2 CH4 (Pg. No. 131-135)
4.6	Trunks & Multiplexing FDM and TDM	Book 1 CH2 (Pg. No. 137,138 140-143)

4.7	Switching - Circuit Switching, Message Switching and Packet Switching, comparison of circuit & packet switching	Book 1 CH2 (Pg. No. 146-151)
4.8	Physical Layer Devices Repeaters, Hubs- active hub Passive hub	Book 2 CH15 (pg. No. 445-447)
5.	The Data Link Layer	[Lectures 9]
5.1	Design Issues – Services provided to the Network Layer , Framing – Concept, Methods - Character Count, Flag bytes with Byte Stuffing, Starting & ending Flags with Bit Stuffing and Physical Layer Coding Violations, Error Control, Flow Control	Book 1 CH3 (pg. No. 184-192)
5.2	Error detection code CRC (Enough problems should be covered on every topic.)	Book 1 CH3 (pg. No. 196-199)
5.3	Data Link Layer Protocols –Noiseless channel -A Simplex, Stop-And-Wait protocol, noisy channel –stop & wait, ARR, Pipelining, Go –back –N ARR & ARQ, selective repeat ARR(No examples & no algorithms)	Book 1 CH3 (pg. No. 312-338)
5.4	Sliding Window Protocols Piggybacking-Need, Advantages/Disadvantages, 1-bit sliding window protocols,	Book 1 CH3 (pg. No. 211-216)
5.5	Data Link Layer Protocols-HDLC – frame format, all frame types PPP – Use, Frame Format, Use of PPP in the Internet	Book 1 CH3 (pg. No. 234-242)
5.6	Data Link Layer Devices - Bridges – Filtering, Transparent Bridges, spanning tree and Source Routing Bridges, Bridges Connecting Different LANs	Book 2 CH15 (pg. No. 447-454)
5.7	Remote bridges	Book 1 CH4 (pg. No. 325-326)
6.	The Medium Access Sublayer	[Lectures 7]
6.1	Random Access Protocols ALOHA – pure and slotted	Book 2 CH12 (pg. No. 364-390)
6.2	CSMA – 1-persistent, p-persistent and non-persistent CSMA/CD,CSMA/CA	
6.3	Controlled Access Reservation, Polling and Token Passing	
6.4	Channelization FDMA, TDMA and CDMA-Analogy, Idea, Chips, Data Representation, Encoding and Decoding, Signal Level, Sequence Generation(Enough problems should be covered on every topic.)	

**Reference Books:**

- 1) Computer Networks by Andrew Tanenbaum, Pearson Education.[4<sup>th</sup> Edition]
- 2) Data Communication and Networking by Behrouz Forouzan, TATA McGraw Hill. .[4<sup>th</sup> Edition]
- 3) Networking All In One Dummies Wiley Publication.[5<sup>th</sup> Edition]

**Guidelines For Examination:**

- 1) Frame and Packet formats should be asked.

- 2) Problems should be asked at least for 8 marks.
- 3) Page no listed above may vary according to year of publication of 4<sup>th</sup> edition but topics remain same.
- 4) All sub topics listed pages of respective reference books should be covered.

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**TITLE OF PAPER : Computer Networks -II**  
**Code No. : CS-343**

**Semester IV**

**Total Lectures: 48**

Pre-requisites: Basics of computer networks covered last semester, Knowledge of ‘C’.

Objectives: This course will prepare students in

1. Basic networking concepts.
2. Understand wired and wireless networks, its types, functionality of layer.
3. Understand importance of network security and cryptography.

Ch. No.	Name of Chapter	Reference Book
1.	Wired LANs	[Lectures 9]
1.1	IEEE Standards Data Link Layer, Physical Layer	Book 2 CH13 (Pg. No 395-397)
1.2	Standard Ethernet MAC Sublayer – Frame Format, Frame Length, Addressing, Access Method	Book 2 CH13 (Pg. No 397-402)
1.3	Physical Layer – Encoding and Decoding, 10Base5, 10Base2, 10Base-T, 10Base-F,	Book 2 CH13 (Pg. No 402-405)
1.4	Changes In The Standard – Bridged Ethernet, Switched Ethernet, Full Duplex Ethernet	Book 2 CH13 (Pg. No 406-409)
1.5	Fast Ethernet – Goals, MAC Sublayer, Topology, Implementation	Book 2 CH13 (Pg. No.409-410)
1.6	Gigabit Ethernet – goals, MAC Sublayer, Topology, Implementation	Book 2 CH13 (Pg. No 412-414)
1.7	Ten-Gigabit Ethernet – goals, MAC Sublayer, Physical Layer	Book 2 CH13 (Pg. No 416)
1.8	Backbone Networks Bus Backbone, Star Backbone, Connecting Remote LANs	Book 2 CH15 (Pg. No 456-458)
1.9	Virtual LANs Membership, Configuration, Communication between Switches, IEEE standards Advantages	Book 1 CH1 (Pg. No 458-463)
2.	Wireless LAN	[Lectures 2]
2.1	IEEE 802.11 Architecture – Basic Service Set, Extended Service Set, Station Types	Book 2 CH14 (Pg. No421-422)

2.2	Bluetooth Architecture – Piconet, scatternet	Book 2 CH14 (Pg. No 434-436)
3.	The Network Layer	[Lectures 10]
3.1	Design Issues Store-and-forward packet switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection Oriented Service, Comparison of Virtual Circuit and Datagram subnets	Book 1 CH5 (Pg. No 343-349)
3.2	Logical Addressing IPV4 Addresses – Address Space, Notations, Classful Addressing, Subnetting, Supernetting, Classless Addressing, Network Address Translation(NAT), (Enough problems should be covered on Addressing),	Book 2 CH19 (Pg. No 549-566)
3.3	IPV4 Protocol Datagram Format, Fragmentation, Checksum, Options	Book 2 CH20 (Pg. No 582-596)
3.4	Routing Properties of routing algorithm, Comparison of Adaptive and Non- Adaptive Routing Algorithms	Book 1 CH5 (Pg. No 350-352)
3.5	Congestion Control – Definition, Factors of Congestion, Difference between congestion control and flow control, General Principles of Congestion Control, Congestion Prevention Policies	Book 1 CH5 (Pg. No 384-389)
3.6	Network Layer Devices –Routers	Book 2 CH15 (Pg. No. 455)
4.	Address Mapping	[Lectures 4]
4.1	Protocol(ARP)-Cache Memory, Packet Format, Encapsulation, Operation, Four Different Cases, Proxy ARP, RARP , BOOTP, DHCP – Static Address Allocation, Dynamic Address Allocation, Manual and automatic Configuration	Book 2 CH21 (Pg. No 611-620)
5.	The Transport Layer	[Lectures 6]
5.1	Process-to-Process Delivery Client Server Paradigm, Multiplexing and De-multiplexing, Connectionless Vs Connection-Oriented Service, Reliable Vs Unreliable	Book 2 CH23 (Pg. No 703-708)
5.2	User Datagram Protocol(UDP) Datagram Format, Checksum, UDP operations, Use of UDP	Book 2 CH23 (Pg. No709-715)
5.3	Transmission Control Protocol (TCP) TCP Services – Process to-Process Communication, Stream Delivery Service, sending and Receiving Buffers, Segments, Full –Duplex Communication, Connection oriented service, Reliable service	Book 2 CH23 (Pg. No 715-719)
5.4	TCP Features –Numbering System, Byte Number, Sequence Number, Acknowledgement Number, Flow Control, Error Control, Congestion Control	Book 2 CH23 (Pg. No 719-720)
5.5	TCP Segment – Format	Book 2 CH23

		(Pg. No 721-723)
6.	The Application Layer	[Lectures 7]
6.1	Domain Name System (DNS) Name Space, Domain, Name Space, Distribution of Name Space, DNS in the Internet, Resolution	Book 2 CH25 (Pg. No 797-809)
6.2	E-MAIL Architecture, User Agent, Message Transfer Agent-SMTP, Message Access Agent-POP3, IMAP4, Web Based Mail	Book 2 CH26 (Pg. No 824-840)
6.3	File Transfer Protocol (FTP) Communication over control connection, Communication over Data Connection, Anonymous FTP	Book 2 CH26 (Pg. No 840-844)
6.4	WWW Architecture, WEB Documents	Book 2 CH27 (Pg. No 851-861)
6.5	HTTP - HTTP Transaction, Persistent and Non persistent Connection, Proxy Server	Book 2 CH27 (Pg. No 861-868)
6.6	Devices- Gateways –Transport & Application Gateways	Book 1 CH4 (Pg. No 328)
7.	Network Security	[Lectures 10]
7.1	Introduction – Security Services- Message-Confidentiality, Integrity, Authentication, Non repudiation. Entity (User)- Authentication.	Book 2 CH31 (Pg. No 961-962)
7.2	Message confidentiality –Confidentiality with Asymmetric-Key Cryptography, Confidentiality with Symmetric-Key Cryptography	Book 2 CH31 (Pg. No 962-964)
7.3	Cryptography Encryption Model, Substitution Cipher and Transposition Cipher (Problems should be covered.)	Book 1 CH8 (Pg. No 724-730)
7.4	Two Fundamental Cryptographic Principles	Book 1 CH8 (Pg. No 735-736)
7.5	Communication Security Firewalls	Book 1 CH8 (Pg. No 776-779)
7.6	Web Security Threats, Secure Naming, DNS Spoofing, Secure DNS, Self Certifying names	Book 1 CH8 (Pg. No 805-813)
7.7	Mobile Code Security Java Applet Security, ActiveX, JavaScript, Viruses	Book 1 CH8 (Pg. No 816-819)
7.8	Social Issues Privacy, Anonymous Remailers, Freedom of Speech, Steganography, Copyright	Book 1 CH8 (Pg. No 819-828)

**Reference Books:**

1. Computer Networks by Andrew Tanenbaum, Pearson Education.[4<sup>th</sup> Edition]
2. Data Communication and Networking by Behrouz Forouzan, TATA McGraw Hill. .[4<sup>th</sup> Edition]

**Guidelines For Examination:**

1. Frame and Packet formats should be asked.
2. Problems should be asked at least for 8 marks.

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**TITLE OF PAPER : Internet Programming I**  
**Code No. : CS-334**

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**Semester III**

**Total Lectures: 48**

**Aim:** To Design dynamic and interactive Web pages.

**Objective:**

- Learn Core-PHP, Server Side Scripting Language
- Learn PHP-Database handling.

**Prerequisite:** HTML.

- |   |             |
|---|-------------|
| <b>1. Introduction to web techniques</b>                    | <b>[8]</b>  |
| 1.1 HTTP basics, Introduction to Web server and Web browser |             |
| 1.2 Introduction to PHP                                     |             |
| 1.3 What does PHP do?                                       |             |
| 1.4 Lexical structure                                       |             |
| 1.5 Language basics   |             |
| Book 1 chapter 2  |             |
| <br>  |             |
| <b>2. Function and String</b>                               | <b>[10]</b> |
| 2.1 Defining and calling a function                         |             |
| 2.2 Default parameters                                      |             |
| 2.3 Variable parameters, Missing parameters                 |             |
| 2.4 Variable function, Anonymous function                   |             |
| 2.5 Types of strings in PHP                                 |             |
| 2.6 Printing functions                                      |             |
| 2.7 Encoding and escaping                                   |             |
| 2.8 Comparing strings                                       |             |
| 2.9 Manipulating and searching strings                      |             |
| 2.10 Regular expressions                                    |             |
| Book 1 chapter 3 and 4                                      |             |
| <br>  |             |
| <b>3. Arrays</b>  | <b>[6]</b>  |
| 3.1 Indexed Vs Associative arrays                           |             |
| 3.2 Identifying elements of an array                        |             |
| 3.3 Storing data in arrays                                  |             |
| 3.4 Multidimensional arrays                                 |             |
| 3.4 Extracting multiple values                              |             |
| 3.5 Converting between arrays and variables                 |             |
| 3.6 Traversing arrays                                       |             |
| 3.7 Sorting   |             |
| 3.8 Action on entire arrays                                 |             |
| 3.9 Using arrays  |             |
| Book 1 chapter 5  |             |

**4. Introduction to Object Oriented Programming** [8]  
4.1 Classes  
4.2 Objects  
4.3 Introspection  
4.4 Serialization  
4.5 Inheritance  
4.6 Interfaces  
4.7 Encapsulation  
Book 1 , 2 chapter 12

**5. Files and directories** [6]  
5.1 Working with files and directories  
5.2 Opening and Closing, Getting information about file, Read/write to file, Splitting name and path from file, Rename and delete files  
5.3 Reading and writing characters in file  
5.4 Reading entire file  
5.5 Random access to file data  
5.6 Getting information on file  
5.7 Ownership and permissions  
Book 2 chapter 7

**6. Databases (PHP-PostgreSQL)** [10]  
6.1 Using PHP to access a database  
6.2 Relational databases and SQL  
6.3 PEAR DB basics  
6.4 Advanced database techniques  
6.5 Sample application (Mini project)  
Book 1 chapter 9

## References

1. Programming PHP By Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
2. Beginning PHP 5 , Wrox publication
3. PHP web services, Wrox publication
4. AJAX Black Book, Kogent solution
5. Mastering PHP , BPB Publication
6. PHP cookbook, O'Reilly publication
7. PHP for Beginners, SPD publication
8. Programming the World Wide Web , Robert W Sebesta(3<sup>rd</sup> Edition)
9. Check out Joomla!press  
**Pearson** (*Addison-Wesley Professional*).
10. [www.php.net.in](http://www.php.net.in)
11. [www.W3schools.com](http://www.W3schools.com)
12. [www.wrox.com](http://www.wrox.com)
13. <https://api.drupal.org>



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**TITLE OF PAPER : Internet Programming II**  
**Code No. : CS-344**

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**Semester IV**

**Total Lectures: 48**

**Aim:** To Design dynamic and interactive Web pages.

**Objective:**

- Learn different technologies used at client Side Scripting Language
- Learn XML,CSS and XML parsers.
- One PHP framework for effective design of web application.
- Learn JavaScript to program the behavior of web pages.
- Learn AJAX to make our application more dynamic.

**1. Web Techniques** **[10]**

- 1.1 Variables
  - 1.2 Server information
  - 1.3 Processing forms
  - 1.4 Setting response headers
  - 1.5 Maintaining state
  - 1.6 SSL
- Book 1 chapter 7

**2. Handling email with php** **[8]**

- 2.1 Email background
  - 2.2 Internet mail protocol
  - 2.3 Structure of an email message
  - 2.4 Sending email with php
  - 2.5 Email attachments.
  - 2.6 Email id validation and verification
  - 2.7 PHP error handling.
- Book 2 chapter 15

**3. PHP framework** **[4]**

- 3.1 Introduction to PHP framework.
  - 3.2 Features, Applications.
  - 3.3 One example like JOOMLA,DRUPAL.
- Book 11, <https://api.drupal.org>

**4. XML** **[8]**

- 4.1 What is XML?
  - 4.2 XML document Structure
  - 4.3 PHP and XML
  - 4.4 XML parser
  - 4.5 The document object model
  - 4.6 The simple XML extension
  - 4.7 Changing a value with simple XML
- Book 2 chapter 8

**5. WEB DESIGNING TECHNOLOGIES(JavaScript-DHTML)** **[10]**

- 5.1 Overview of JavaScript, DHTML
- 5.2 Object Orientation and JavaScript

- 5.3 Basic Syntax(JS datatypes, JS variables )
- 5.4 Primitives, Operations and Expressions
- 5.5 Screen Output and keyboard input(Verification and Validation)
- 5.6 JS Control statements
- 5.7 JS Functions
- 5.8 JavaScript HTML DOM Events(onmouseup, onmousedown, onclick, onload,onmouseover,onmouseout).
- 5.9 JS Strings.
- 5.10 JS String methods
- 5.11 JS popup boxes(alert, confirm, prompt).
- 5.12 Changing property value of different tags using DHTML  
(ex. adding innerhtml for DIV tag, changing source of image etc.).

Book 10, [www.w3schools.com](http://www.w3schools.com).

## 6. AJAX

[8]

- 6.1 Introduction of AJAX
  - 6.2 AJAX web application model
  - 6.3 AJAX –PHP framework
  - 6.4 Performing AJAX validation
  - 6.5 Handling XML data using php and AJAX
  - 6.6 Connecting database using php and AJAX
- Book 4 chapter 1,2 and 9

## References

1. Programming PHP By Rasmus Lerdorf and Kevin Tatroe O'Reilly publication
2. Beginning PHP 5, Wrox publication
3. PHP web services , Wrox publication
4. AJAX Black Book Kogent solution
5. Mastering PHP BPB Publication
6. PHP cookbook O'Reilly publication
7. Learning PHP and MYSQL, O'Reilly publication
8. PHP and MYSQL, O'Reilly publication
9. PHP for Beginners, SPD publication
10. Programming the World Wide Web , Robert W Sebesta(3<sup>rd</sup> Edition)
11. Check out Joomla!presss **Pearson** (*Addison-Wesley Professional*).
12. [www.php.net.in](http://www.php.net.in)
13. [www.W3schools.com](http://www.W3schools.com)
14. [www.wrox.com](http://www.wrox.com)
15. <https://api.drupal.org>

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B.Sc. COMPUTER SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Programming in Java-I**  
**Code No. : CS-335**

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**Semester IV**

**Total Lectures: 48**

**Prerequisite:**

- Knowledge of C Programming language

**Objective:**

- To learn Object Oriented Programming language
- To handle abnormal termination of a program using exception handling
- To create flat files
- To design User Interface using Swing and AWT

**1. An Introduction to Java** **[4]**

- 1.1 A Short History of Java
- 1.2 Features or buzzwords of Java
- 1.3 Comparison of Java and C++
- 1.4 Java Environment
- 1.5 Simple java program
- 1.6 Java Tools – jdb, javap, javadoc
- 1.7 Java IDE – Eclipse/NetBeans (Note: Only for Lab Demonstration)

**2. An Overview of Java** **[4]**

- 2.1 Types of Comments
- 2.2 Data Types
- 2.3 Final Variable
- 2.4 Declaring 1D, 2D array
- 2.5 Accepting input using Command line argument
- 2.6 Accepting input from console (Using BufferedReader class)

**3. Objects and Classes** **[8]**

- 3.1 Defining Your Own Classes
- 3.2 Access Specifiers (public, protected, private, default)
- 3.3 Array of Objects
- 3.4 Constructor, Overloading Constructors and use of 'this' Keyword
- 3.5 static block, static Fields and methods
- 3.6 Predefined class – Object class methods (equals(), toString(), hashCode(), getClass())
- 3.7 Inner class
- 3.8 Creating, Accessing and using Packages
- 3.9 Creating jar file and manifest file
- 3.10 Wrapper Classes
- 3.11 Garbage Collection (finalize() Method)
- 3.12 Date and time processing

**4. Inheritance and Interface** **[7]**

- 4.1 Inheritance Basics (extends Keyword) and Types of Inheritance
- 4.2 Superclass, Subclass and use of Super Keyword
- 4.3 Method Overriding and runtime polymorphism

- 4.4 Use of final keyword related to method and class
- 4.5 Use of abstract class and abstract methods
- 4.6 Defining and Implementing Interfaces
- 4.7 Runtime polymorphism using interface
- 4.7 Object Cloning

## **5. Exception Handling [4]**

- 5.1 Dealing Errors
- 5.2 Exception class, Checked and Unchecked exception
- 5.3 Catching exception and exception handling
- 5.4 Creating user defined exception
- 5.5 Assertions

## **6. Strings, Streams and Files [7]**

- 6.1 String class and StringBuffer Class
- 6.2 Formatting string data using format() method
- 6.2 Using the File class
- 6.3 Stream classes
  - Byte Stream classes
  - Character Stream Classes
- 6.4 Creation of files
- 6.5 Reading/Writing characters and bytes
- 6.6 Handling primitive data types
- 6.7 Random Access files

## **7. User Interface Components with AWT and Swing [10]**

- 7.1 What is AWT ? What is Swing? Difference between AWT and Swing.
- 7.2 The MVC Architecture and Swing
- 7.3 Layout Manager and Layouts, The JComponent class
- 7.4 Components –  
JButton, JLabel, JText, JTextArea, JCheckBox and JRadioButton,  
JList, JComboBox, JMenu and JPopupMenu Class, JMenuItem and JCheckBoxMenuItem,  
JRadioButtonMenuItem , JScrollBar
- 7.5 Dialogs (Message, confirmation, input), JFileChooser, JColorChooser
- 7.6 Event Handling: Event sources, Listeners
- 7.7 Mouse and Keyboard Event Handling
- 7.8 Adapters
- 7.9 Anonymous inner class

## **8. Applet [4]**

- 8.1 Applet Life Cycle
- 8.2 appletviewer tool
- 8.3 Applet HTML Tags
- 8.4 Passing parameters to Applet
- 8.5 repaint() and update() method

### **References:**

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B.Sc. COMPUTER SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Programming in Java-II**  
**Code No. : CS-345**

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**Semester IV**

**Total Lectures : 48**

**Prerequisite:**

- Knowledge of Core Java (CS – 345)

**Objectives:**

- To learn database programming using Java
- To study web development concept using Servlet and JSP
- To develop a game application using multithreading
- To learn socket programming concept

**1. Collection**

**[6]**

- 1.1 Introduction to the Collection framework
- 1.2 List – ArrayList, LinkedList and Vector, Stack, Queue
- 1.3 Set - HashSet, TreeSet, and LinkedHashSet
- 1.4 Map – HashMap, LinkedHashMap, Hashtable and TreeMap
- 1.5 Interfaces such as Comparator, Iterator, ListIterator, Enumeration

**2. Database Programming**

**[10]**

- 2.1 The design of jdbc, jdbc configuration
- 2.2 Types of drivers
- 2.3 Executing sql statements, query execution
- 2.4 Scrollable and updatable result sets
- 2.5 Metadata – DatabaseMetadata, ResultSetMetadata
- 2.6 Transactions – commit(), rollback(), SavePoint  
(Database : PostgreSQL)

**3. Servlet**

**[12]**

- 3.1 Introduction to Servlet and Hierarchy of Servlet
- 3.2 Life cycle of servlet
- 3.3 Tomcat configuration (Note: Only for Lab Demonstration)
- 3.4 Handling get and post request (HTTP)
- 3.5 Handling a data from HTML to servlet
- 3.6 Retriving a data from database to servlet
- 3.7 Session tracking – User Authorization, URL rewriting, Hidden form fields, Cookies and HttpSession

**4. JSP**

**[10]**

- 4.1 Simple first JSP program
- 4.2 Life cycle of JSP
- 4.2 Implicit Objects
- 4.3 Scripting elements – Declarations, Expressions, Scriptlets, Comments
- 4.4 JSP Directives – Page Directive, include directive
- 4.5 Mixing Scriptlets and HTML
- 4.6 Example of forwarding contents from database to servlet, servlet to JSP and displaying it using JSP scriptlet tag

## **5. Multithreading**

[6]

- 5.1 What are threads?
- 5.2 Life cycle of thread
- 5.3 Running and starting thread using Thread class
- 5.4 Thread priorities
- 5.5 Running multiple threads
- 5.6 The Runnable interface
- 5.7 Synchronization and interthread communication

## **6. Networking**

[4]

- 6.1 Networking basics – Protocol, Addressing, DNS, URL, Socket, Port
- 6.2 The java.net package – InetAddress, URL, URLConnection class
- 6.3 SocketServer and Socket class
- 6.4 Creating a Socket to a remote host on a port (creating TCP client and server)
- 6.5 Simple Socket Program Example

### **References:**

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press
- 5) Core Java Volume-II-Advanced Features, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : Object Oriented Software Engineering**  
**Code No. : CS-336**

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**Semester III**

**Total Lectures: 48**

**Prerequisites**

- Knowledge of Object Oriented Concepts
- Knowledge of Classical Software Engineering

**Aim**

To Understand Object Oriented Modeling techniques and their applicability.

**Objectives**

- Understanding importance of Object Orientation in Software engineering
- Understand the components of Unified Modeling Language
- Understand techniques and diagrams related to structural modeling
- Understand techniques and diagrams related to behavioral modeling
- Understand techniques of Object Oriented analysis, design and testing

**1. Object Oriented Concepts and Principles**

**[4]**

1.1 What is Object Orientation ? - Introduction , Object , Classes and Instance , Polymorphism, Inheritance

1.2 Object Oriented System Development- Introduction, Function/Data Methods (With Visibility), Object Oriented Analysis, Object Oriented Construction

1.3 Identifying the Elements of an Object Model

1.4 Identifying Classes and Objects

1.5 Specifying the Attributes (With Visibility)

1.6 Defining Operations

1.7 Finalizing the Object Definition

**2. Introduction to UML**

**[2]**

2.1 Concept of UML

2.2 Advantages of UML

**3. Basic Structural Modeling**

**[5]**

3.1 Classes

3.2 Relationship

3.3 Common Mechanism

3.4 Class Diagram (Minimum three examples should be covered)

**4. Advanced Structural Modeling**

**[7]**

4.1 Advanced Classes

4.2 Advanced Relationship

4.3 Interface

4.4 Types and Roles

4.5 Packages

4.6 Object Diagram (Minimum three examples should be covered)

**5. Basic Behavioral Modeling**

**[9]**

- 5.1 Interactions
- 5.2 Use Cases and Use Case Diagram with stereo types (Minimum three examples should be covered)
- 5.3 Interaction Diagram (Minimum two examples should be covered)
- 5.4 Sequence Diagram (Minimum two examples should be covered)
- 5.5 Activity Diagram (Minimum two examples should be covered)
- 5.6 State Chart Diagram (Minimum two examples should be covered)

## **6. Object Oriented Analysis**

[6]

- 6.1 Iterative Development and the Rational Unified Process
- 6.2 Inception
- 6.3 Understanding Requirements
- 6.4 Use Case Model From Inception to Elaboration
- 6.5 Elaboration

## **7. Object Oriented Design**

[4]

- 7.1 The Booch Method, The Coad and Yourdon Method and Jacobson Method and Rumbaugh Method
- 7.2 The Generic Components of the OO Design Model
- 7.3 The System Design Process - Partitioning the Analysis Model, Concurrency and Sub System Allocation, Task Management Component, The Data Management Component, The Resource Management Component, Inter Sub System Communication
- 7.4 Object Design Process

## **8. Architectural modeling**

[6]

- 8.1 Component
- 8.2 Components Diagram (Minimum two examples should be covered)
- 8.3 Deployment Diagram (Minimum two examples should be covered)
- 8.4 Collaboration Diagram (Minimum two examples should be covered)

## **9. Object Oriented Testing**

[5]

- 9.1 Object Oriented Testing Strategies
- 9.2 Test Case Design for Object Oriented Software
- 9.3 Inter Class Test Case Design  
(Use of any freeware designing tool)

## **References.**

1. Grady Booch, James Rumbaugh, The Unified Modeling Language User/Reference Guide, Pearson Education INC
2. Ivar Jacobson, Object Oriented Software Engineering, Pearson Education INC
3. Craig Larman, Applying UML and Patterns Pearson Education INC
4. Bennett, Simon, Object Oriented Analysis and Design McGraw Hill



**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Computer Graphics**  
**Code No. : CS-346**

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**Semester IV**

**Total Lectures: 48**

**Pre – Requisites**

- Computer programming skills in C programming language
- Basic understanding of use of data structures
- Basic Mathematical concepts related to matrices and geometry

**Objectives**

- To study how graphics objects are represented in Computer
- To study how graphics system in a computer supports presentation of graphics information
- To study how interaction is handled in a graphics system
- To study how to manipulate graphics object by applying different transformations
- To provide the programmer's perspective of working of computer graphics

**1. Introduction to Computer graphics** **[4]**

- 1.1 Introduction to computer graphics & graphics systems
- 1.2 Components of Computer Graphics Representation, Presentation , Interaction and Transformations
- 1.3 Applications of Computer Graphics
- 1.3 Pixel/Point ,Raster v/s Vector ,RGB color model, intensity
- 1.4 Programming essentials – event driven programming. OpenGL library

**2. Input devices and Interaction tasks** **[4]**

- 2.1 Logical Interaction – Locator, valuator , pick and choice;
- 2.2 Physical devices used for interaction – keyboard, mouse, trackball,spaceball, tablets, light pen, joy stick, touch panel, data glove;
- 2.4 Keyboard , Mouse interaction in OpenGL
- 2.5 Graphical User Interfaces- cursors , radio buttons, scroll bars, menus, icons
- 2.6 Implementing GUI in open GL

**3. Presentation and Output devices** **[4]**

- 3.1 Presentation Graphics - frame buffer, display file, lookup table;
- 3.2 Display devices, Random and Raster scan display devices; CRT,
- 3.3 Hardcopy devices - Plotters and Printers

**4. Raster Scan Graphics** **[10]**

- 4.1 Line drawing algorithms; DDA algorithm, Bresenham's line drawing algorithm, Circle generation algorithm;
- 4.2 Scan conversions- Generation of the Display, Image compression
- 4.3 Displaying Lines and characters
- 4.3 Polygon filling -Scan converting polygons, fill algorithms, Boundary fill algorithm, flood fill algorithm

**5. Transformations** **[7]**

- 5.1 Basic transformations: translation, rotation, scaling; Matrix representations & homogeneous coordinates, Reflection, shear
- 5.2 Transformation of points, lines, parallel lines, intersecting lines. Viewing pipeline
- 5.3 Window to viewport co-ordinate transformation. Setting window and viewport in OpenGL.

## **6 Clipping** [7]

- 6.1 clipping operations , point clipping ,
- 6.2 Line clipping; Cohen Sutherland algorithm, Midpoint subdivision algorithm, Cyrus beck algorithm;
- 6.3 Polygon clipping , Sutherland Hodgman algorithm, Weiler-Atherton Algorithm

## **7 3D transformation & viewing** [6]

- 7.1 3D transformations: translation, rotation, scaling & other transformations;
- 7.2 Three dimensional viewing, Parallel and Perspective projections,
- 7.3 View Volumes and General Projection Transformations.
- 7.4 3 D clipping

## **8 Hidden surfaces Elimination** [4]

- 8.1 Depth comparison, A-buffer algorithm, Back face detection; Depth -Buffer
- 8.2 Scan-line Method - BSP tree method, the Painter's algorithm, Area-subdivision algorithm;

### **Text Books:**

1. Hearn, Baker – “ Computer Graphics ( C version 2nd Ed.)” – Pearson education
2. F. S. Hill, Stephen Kelly, Computer Graphics using OpenGL, PHI Learning
3. David F. Rogers - Procedural Elements of Computer Graphics, Tata McGRAw Hill

### **Reference Books:**

4. Foley, Vandam, Feiner, Hughes – “Computer Graphics principles (2nd Ed.) – Pearson Education.
5. W. M. Newman, R. F. Sproull – “Principles of Interactive computer Graphics” – TMH.
6. D. F. Rogers, J. A. Adams – “ Mathematical Elements for Computer Graphics (2nd Ed.)” – TMH
7. Z. Xiang, R. Plastock – “ Schaum's outlines Computer Graphics (2nd Ed.)” – TMH

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER : System Programming & Operating System**  
**Code No. : CS-347**

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**Aim:**

To understand the process of designing and implementing System programs and operating system components.

**Objective :-**

1. Design and implement System programs with minimal features to understand their complexity.
2. Design and implement simulations of operating system level procedures.

**Syllabus**

Sr. No	Topic	Lectures
1	Line Editor	8 lectures
2	SMAC0 simulator	8 lectures
3	Assembler	12 Lectures
4	Macro processor	12 lectures
5	DFA driver	8 lectures
6	Development Utilities	8 lectures
7	Toy shell	8 Lectures
8	CPU Scheduler	12 lectures
9	Deadlock detection	8 lectures
10	Page Replacement Algorithms	12 lectures
11	File Allocation methods	12 Lectures

**Examination**

Internal Marks : Activity + Labbook(10+10)

External Marks : two programs(35each) oral(5) Activity(5)

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**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Lab Course II – Programming in Java**  
**Code No. : CS-348**

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**Aim:**

To understand the process of designing and implementing Core and Advanced Java programs.

**Objective :-**

1. Implement core Java programs to solve simple problems
2. Implement Client and Server end Java programs

**Syllabus**

Sr. No	Topic	Lectures
<b>Core and Advanced Java</b>		
1	Simple Java programs	8 Lectures
2	Arrays and Packages	8 Lectures
3	Inheritance and Interfaces	8 Lectures
4	Exception Handling	8 Lectures
5	File Handling	8 Lectures
6	GUI designing & Event Handling	8 Lectures
7	Database Programming	8 Lectures
8	Multithreading	4 Lectures
9	Collection	8 Lectures
10	Servlets	8 Lectures
11	JSP	8 Lectures
12	Socket Programming	4 Lectures
<b>Computer Graphics</b>		
1	Simple Graphics program using OpenGL	4 Lectures
2	Using graphics primitives to display graphics	4 Lectures
3	Window to viewport transformations and other transformations	4 Lectures
4	Using simple Keyboard and Mouse interaction	4 Lectures
5	Graphics Mini project	16 Lectures

**Examination**

Internal Marks : Activity(CG) + Seminar(Enhanced java+ listening) (10+10)

External Marks : two programs(30each) oral(5) Activity(5)+ Labbook(10)

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**Proposed Draft of**  
**T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS**  
**TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16**  
**TITLE OF PAPER :Lab Course III – Programming in PHP & Project**  
**Code No. : CS-349**

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**Aim:**

To understand the process of designing and implementing Web applications, using PHP.

**Objective :-**

1. Implement Simple PHP programs to solve simple problems

**Syllabus**

Sr. No	Topic	Lectures
<b>PHP</b>		
1	String manipulation	8 Lectures
2	Arrays	8 Lectures
3	Inheritance	8 Lectures
4	File Handling	8 Lectures
5	Form designing	8 Lectures
6	Database Connectivity	8 Lectures
7	Sessions and cookies	8 Lectures
8	Java script with AJAX	8 Lectures
<b>Networking</b>		
1	Setting a LAN Environment	4 Lectures
2	Configuring the Server	4 Lectures
3	Use of Service Primitives	4 Lectures
4	Use of Networking Tools	12 Lectures
<b>Project</b>		
1	Choose Project topic and Prepare problem description	
2	Study of Existing System	
3	Identifying users and functionalities of proposed system	
4	Preparing the Design of the proposed system- Data Design Screen and Report Designs	
5	Implementation	

**Examination**

Internal Marks: Project (20) Continuous Evaluation.

External Marks: One programs (30) ( large program on PHP + small program PHP), networking(10)  
 – Internal, Lab book(10), Project(30) -20 Marks External + 10 Marks Internal for Project Demo  
 before Final Practical Exam