

# **B.Com (Computer Applications) Syllabus (CBCS)**

*(w.e.f. 2019–2020)*



**FACULTY OF COMMERCE  
SATAVAHANA UNIVERSITY  
KARIMNAGAR - 505002 T.S.**

**B.COM (Computer Applications)**  
**CBCS COURSE STRUCTURE**  
 w.e.f. 2019-'20

Sl.No.	Code	Course Title	HPW	Credits	Exam Hrs	Marks
(1)	(2)	(3)	(5)	(6)	(7)	(8)
<b>SEMESTER - I</b>						
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	Environmental Science	2	2	1 ½ hrs	40U+10I
4.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Fundamentals of Information Technology	3T+4P	5	1 ½ hrs	50T+35P + 15I
		<b>Total</b>	<b>27</b>	<b>25</b>		
<b>SEMESTER - II</b>						
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	Basic Computer Skills	2	2	1 ½ hrs	40U+10I
10.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Programming with C & C++	3T+4P	5	1 ½ hrs	50T+35P + 15I
		<b>Total</b>	<b>27</b>	<b>25</b>		
<b>SEMESTER - III</b>						
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	a)Principles of Insurance/ b)Foundation of Digital Marketing/ c)Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	a)Practice of Life Insurance/ b)Web Design & Analytics/ c)Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Relational Database Management System	3T+4P	5	1 ½ hrs	50T+35P + 15I
		<b>Total</b>	<b>27</b>	<b>25</b>		
<b>SEMESTER - IV</b>						
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	a)Practice of General Insurance/ b)Social Media Marketing c)Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	a)Regulation of Insurance Business/ b)Search Engine Optimization & Online Advertising c)Data Visualisation&Storytelling	2	2	1 ½ hrs	40U+10I
24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I

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26.	DSC403	Web Technologies	3T+4P	5	1 ½ hrs	50T+35P+15I
		<b>Total</b>	<b>27</b>	<b>25</b>		
		<b>SEMESTER - V</b>				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	a) Business Economics / b) Advanced Aspects of Income Tax	4	4	3 hrs	80U+20I
30.	DSE501	a) Cost Accounting/ b) Financial Planning & Performance/ c) International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	a) Computerized Accounting/ b) Financial Decision Making-I/ c) International Tax & Regulation	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	a) Management Information Systems/ b) Ecommerce/c) Mobile Applications	3T+4P	5	1 ½ hrs	50T+35P + 15I
		<b>Total</b>	<b>29/27</b>	<b>25</b>		
		<b>SEMESTER - VI</b>				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
36.	DSE601	a) Cost Control and Management Accounting/ b) Financial control/ c) International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	a) Theory and Practice of GST/ b) Financial Decision Making-II / c) International Auditing	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	DSE603	a) Multimedia Systems/ b) Cyber Security/c) Data Analytics	3T+4P	5	1 ½ hrs	50T+35P + 15I
		<b>Total</b>	<b>31/29</b>	<b>25</b>		
		<b>GRAND TOTAL</b>	<b>168/164</b>	<b>150</b>		

**ELS:** English Language Skill; **SLS:** Second Language Skill; **AEC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T:** Theory; **P:** Practical; **I:** Internal Exam **U:** University Exam; **PR:** Project Report; **VV:** Viva-Voce Examination.

**Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.**

**SUMMARY OF CREDITS**

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
4	SEC	4	2	8
5	GE	1	4	4
6	Project Report	1	4	4
7	DSC	12	5	60
8	DSE	6	5	30
	<b>TOTAL</b>	<b>40</b>		<b>150</b>
	<b>Commerce</b>	<b>24</b>		<b>106</b>
<b>CREDITS UNDER NON-CGPA</b>		<b>NSS/NCC/Sports/Extra Curricular</b>	<b>Up to 6 (2 in each year)</b>	
		<b>Summer Internship</b>	<b>Up to 4 (2 in each after I &amp; II years)</b>	

**Paper DSC 101: FINANCIAL ACCOUNTING - I**

**Objective:** To acquire conceptual knowledge of basics of accounting and preparation of final accounts of sole trader.

**UNIT-I: ACCOUNTING PROCESS:**

Financial Accounting: Introduction – Definition – Evolution – Functions-Advantages and Limitations –Users of Accounting Information- Branches of Accounting – Accounting Principles: Concepts and Conventions- Accounting Standards– Meaning – Importance – List of Accounting Standards issued by ASB – Accounting System- Types of Accounts – Accounting Cycle- Journal- Ledger and Trial Balance. (Including problems)

**UNIT-II: SUBSIDIARY BOOKS:**

Meaning –Types - Purchases Book - Purchases Returns Book - Sales Book - - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book - Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper.(Including problems)

**UNIT-III: BANK RECONCILIATION STATEMENT:**

Meaning – Need - Reasons for differences between cash book and pass book balances – Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement. (Including problems)

**UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION:**

Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure. Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit. (Including problems)

Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems)

**UNIT-V: FINAL ACCOUNTS:**

Final Accounts of Sole Trader: Meaning -Uses -Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries.(Including problems)

**SUGGESTED READINGS:**

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheshwari, Vikas.
7. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
8. Financial Accounting: JawaharLal, Himalaya Publishing House.

**Paper DSC 102: BUSINESS ORGANISATION AND MANAGEMENT**

**Objective:** To acquaint the students with the basics of Commerce and Business concepts and functions, forms of Business Organization and functions of Management.

**UNIT-I: INTRODUCTION AND FORMS OF BUSINESS ORGANISATIONS:**

Concepts of Business, Trade, Industry and Commerce - Objectives and functions of Business –Social Responsibility of a business - Forms of Business Organization - Meaning, Characteristics, Advantages and Disadvantages of Sole Proprietorship – Meaning, Characteristics, Advantages and Disadvantages of Partnership - Kinds of Partners - Partnership Deed -Concept of Limited liability partnership – Meaning, Characteristics, Advantages and Disadvantages of Hindu Undivided Family – Meaning, Advantages and Disadvantages of Co-Operative Organization.

**UNIT-II: JOINT STOCK COMPANY:**

Joint Stock Company - Meaning - Definition - Characteristics - Advantages and Disadvantages - Kinds of Companies - Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents – Prospectus - Contents – Red herring Prospectus- Statement in lieu of Prospectus (As per Companies Act. 2013).

**UNIT-III: INTRODUCTION TO FUNCTIONS OF MANAGEMENT:**

Management - Meaning - Characteristics - Functions of Management - Levels of Management – Skills of Management- Scientific Management - Meaning - Definition - Objectives - Criticism – Fayol’s 14 Principles of Management .

**UNIT-IV: PLANNING AND ORGANISING:** Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages – Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits –Weaknesses—Definition of Organizing-Organization-Process of Organizing - Principles of Organization - Formal and Informal Organizations - Line, Staff Organizations - Line and Staff Conflicts - Functional Organization - Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision.

**UNIT-V: AUTHORITY, COORDINATION AND CONTROL:**

Meaning of Authority, Power, responsibility and accountability - Delegation of Authority - Decentralization of Authority - Definition, importance, process, and principles of Coordination-techniques of Effective Coordination - Control - Meaning - Definition – Relationship between planning and control -Steps in Control – Types (post, current and pre-control) - Requirements for effective control.

**SUGGESTED READINGS:**

1. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
2. Business Organisation & Management: Patrick Anthony, Himalaya Publishing House
3. Business Organization & Management: Dr. Manish Gupta, PBP.
4. Organization & Management: R. D. Agarwal, McGraw Hill.
5. Modern Business Organization: S.A. Sherlekar, V.S. Sherlekar, Himalaya Publishing House
6. Business Organization & Management: C.R. Basu, Tata McGraw Hill
7. Business Organization & Management: M.C. Shukla S. Chand,
8. Business Organisation and Management: D.S. Vittal, S. Chand
9. Organizational Behaviour Text & Cases: V.S.P. Rao, Himalaya Publishing House
10. Business Organization & Management: Uma Shekaram, Tata McGraw Hill
11. Business Organization & Management: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr.Neeru Vasihth, Tax Mann Publications.
- 13.

**Paper DSC 103: FUNDAMENTALS OF INFORMATION TECHNOLOGY**

**Hours Per Week:** 6 (4T+2P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** To understand the basic concepts and terminology of information technology and to identify issues related to information security.

**UNIT-I: INTRODUCTION TO COMPUTERS:**

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer.

Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

**UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:**

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another.

Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

**UNIT-III: SOFTWARE:**

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

**UNIT-IV: OPERATING SYSTEM:**

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

**UNIT-V: DATA COMMUNICATION:**

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types (modes), Data Transmission Media, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

**SUGGESTED READINGS:**

*Computer Fundamentals: P.K. Sinha*

**Paper AEC2: BASIC COMPUTER SKILLS**

**Hours Per Week:** 2

**Credits:** 2

**Exam Hours:** 1 ½

**Marks:** 40U+10I

**Objective:** to impart a basic level understanding of working of a computer and its usage.

**UNIT I: UNDERSTANDING OF COMPUTER AND WORD PROCESSING:**

**Knowing computer:** What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

**Operating Computer using GUI Based Operating System:**What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

**Understanding Word Processing:**Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

**UNIT II: SPREAD SHEET, PRESENTATION SOFTWARE & INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS:**

**Using Spread Sheet:**Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

**Basics of presentation software:** Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

**Introduction to Internet, WWW and Web Browsers:**

**Introduction to Internet:**Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.

**World Wide Web:** Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.

**Web Browsing:** Software, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

**SUGGESTED READINGS:**

1. Introduction to Computers, Peter Norton, McGrawHill , 2012.
2. Using Information Technology, Brian K williams, StaceyC.Sawyer, Tata McGrawHill.

**Web Resources:**

1. <https://online.stanford.edu/courses/soe-yccscs101-sp-computer-science-101>
2. <https://www.extension.harvard.edu/open-learning-initiative/intensive-introduction-computer-science>.

**Paper DSC 201: FINANCIAL ACCOUNTING-II**

**Objective:** To acquire accounting knowledge of bills of exchange and other business accounting methods.

**UNIT-I: BILLS OF EXCHANGE:**

Bills of Exchange - Definition- Distinction between Promissory note and Bills of exchange- Accounting treatment of Trade bills: Books of Drawer and Acceptor- Honour and Dishonour of Bills- Renewal of bills- Retiring of bills under rebate- Accommodation bills.(Including problems)

**UNIT-II: CONSIGNMENT ACCOUNTS:**

Consignment – Meaning – Features– Proforma invoice - Account sales – Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock –Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price. (Including problems)

**UNIT-III: JOINT VENTURE ACCOUNTS:**

Joint Venture – Meaning –Features-Difference between Joint Venture and Consignment-Accounting Procedure-Methods of Keeping Records for Joint Venture Accounts-Method of Recording in co-ventures books-Separate Set of Books Method- Joint Bank Account-Memorandum Joint Venture Account (Including problems)

**UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:**

Single Entry System – Meaning -Features–Difference between Single Entry and Double Entry systems -Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

**UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:**

Non- Profit Organization – Meaning – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet(Including problems)

**SUGGESTED READINGS:**

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.



**Paper DSC 202: BUSINESS LAWS**

**Objective:** To understand basics of contract act, sales of goods act, IPRs and legal provisions applicable for establishment, management and winding up of companies in India.

**UNIT-I: INDIAN CONTRACT ACT:**

Agreement and contract - Essentials of a valid contract - Types of contracts - Offer and Acceptance - Essentials of valid offer and acceptance - Communication and revocation of offer and acceptance – Consideration definition - Essentials of valid consideration -Modes of Discharge of a contract - Performance of Contracts - Breach of Contract - Remedies for Breach - Significance of Information Technology Act.

**UNIT-II: SALE OF GOODS ACT AND CONSUMER PROTECTION ACT:**

Contract of Sale: Essentials of Valid Sale - Sale and Agreement to Sell – Definition and Types of Goods - Conditions and Warranties - Caveat Emptor - Exceptions - Unpaid Seller - Rights of Unpaid Seller. Consumer Protection Act 1986: Definitions of Consumer – Person – Goods - Service -Consumer Dispute - Consumer Protection Councils - Consumer Dispute Redressal Agencies - Appeals.

**UNIT-III: INTELLECTUAL PROPERTY RIGHTS:**

Trade Marks: Definition - Registration of Trade Marks - Patents: Definition - Kinds of Patents - Transfer of the Patent Rights - Rights of the Patentee - Copy Rights: Definition -- Rights of the Copyright Owner - Terms of Copy Right - Copy Rights Infringement - Other Intellectual Property Rights: Trade Secrets - Geographical Indications.

**UNIT-IV: MANAGEMENT OF COMPANIES AND MEETINGS:**

Director: Qualification - Disqualification - Position - Appointment - Removal – Duties and Liabilities – Loans – Remuneration – Managing Director – Corporate Social Responsibility – Corporate Governance. Meeting: Meaning – Requisites - Notice – Proxy - Agenda – Quorum – Resolutions – Minutes – Kinds – Shareholder Meetings - Statutory Meeting - Annual General Body Meeting – Extraordinary General Body Meeting – Board Meetings.

**UNIT-V: WINDING UP:**

Meaning – Modes of Winding Up –Winding Up by tribunal – Voluntary Winding Up – Compulsory Winding Up – Consequences of Winding Up – Removal of name of the company from Registrar of Companies – Insolvency and Bankruptcy code - 2016.

**SUGGESTED READINGS:**

- 1) Company Law: ND Kapoor, Sultan Chand and Co.
- 2) Company Law: Rajashree. – HPH
- 3) Business Law - Kavitha Krishna, Himalaya Publishing House
- 4) Business Laws – Dr. B. K. Hussain, Nagalakshmi - PBP
- 5) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
- 6) Company Law and Practice: GK Kapoor & Sanjay Dhamija, Taxmann Publication.
- 7) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
- 8) Corporate Law: PPS Gogna, S Chand.
- 9) Business Law: D.S. Vital, S Chand
- 10) Company Law: Bagrial AK, Vikas Publishing House.

**Paper DSC 203:PROGRAMMING WITH C & C++**

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

**Objective:** To understand the fundamental concepts of programming in C and Object Oriented Programming using C++.

**UNIT-I: INTRODUCTION TO C LANGUAGE, VARIABLES, DATA TYPES AND OPERATORS**

**Introduction:** Types of Languages- History of C language – Basic Structure –Programming Rules – Flow charts-algorithms–Commonly used library functions - Executing the C Program - Pre-processors in “C”- Keywords & Identifiers – Constants – **Variables:** Rules for defining variables - Scope and Life of a Variable– **Data types** - Type Conversion - Formatted Input and Output operations. **Operators:** Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special - Bitwise - Increment / Decrement operator.

**UNIT-II: WORKING WITH CONTROL STATEMENTS, LOOPS**

**Conditional statements:** Introduction - If statements - If-else statements – nested if-else – break statement-continue statement-go to statement-Switch statements. **Looping statements:** Introduction- While statements – Do-while statements - For Statements-nested loop statements.

**UNIT-III: FUNCTIONS, ARRAYS AND STRINGS**

**Functions:** Definition and declaration of functions- Function proto type-return statement- types of functions-formatted and unformatted functions. **Built in functions:** Mathematical functions - String functions - Character functions - Date functions.**User defined functions:** Introduction - Need for user defined functions - Elements of functions – Function call – call by value and call by reference - Recursive functions.**Arrays:** Introduction - Defining an array - Initializing an array –characteristics of an array- One dimensional array – Two dimensional array – Multi dimensional array. **Strings:** Introduction - Declaring and initializing string - Reading and Writing strings - String standard functions.

**UNIT-IV: POINTERS, STRUCTURES AND UNIONS**

**Pointers:** Features of pointers- Declaration of Pointers-arithmetic operations with pointers

**Structures:** Features of Structures - Declaring and initialization of Structures –Structure within Structure- Array of Structures- Enumerated data type-**Unions**-Definition and advantages of Unions comparison between Structure & Unions.

**UNIT-V: OBJECT ORIENTED CONCEPTS USING C++**

**Object Oriented Programming:** Introduction to Object Oriented Programming - Structure of C++ – Simple program of C++– Storage Classes-Similarities and Differences between C & C++ - Data Members-Member Functions - Object Oriented Concepts-Class-Object-Inheritance-Polymorphism-Encapsulation-Abstraction.

**SUGGESTED READINGS:**

1. Programming with C& C++ :IndrakantiSekhar, V.V.R.Raman&V.N.Battu, Himalaya Publishers.
2. Programming in ANSI C: Balagurusamy, McGraw Hill.
3. Mastering C: K.R. Venugopal, McGraw Hill.
4. C: The Complete Reference: H.Schildt, McGraw Hill.
5. Let Us C: Y.Kanetkar, BPB.
6. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
7. Mastering C++: KR.Venugopal&R.Buyya, McGraw Hill.
8. Schaum’s Outlines: Programming with C++: by John R Hubbard.
9. Let Us C++: Y.Kanetkar, BPB.

**Paper SEC1 (a): PRINCIPLES OF INSURANCE**

*Objective: To make students to learn the Principles of Insurance.*

**UNIT I: RISK MANAGEMENT AND INSURANCE & INSURANCE TERMINOLOGY:**

Risk Management –Types of Risks – Actual and Consequential Losses – Management of Risks – Different Classes of Insurance – Importance of Insurance – Management of Risk by Individuals and Insurers – Fixing of Premiums – Reinsurance– Role of Insurance in Economic Development and Social Security – Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Role of Regulators – Common and specific terms in Life and Non Life Insurance - Understanding Insurance Customers – Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior.

**UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS:**

Insurance Contract Terms – Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause - Life Insurance Products: Risk of Dying Early – Risk of Living too Long – Products offered – Term Plans – Pure Endowment Plans – Combinations of Plans – Traditional Products – Linked Policies – Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets – Exposure to Perils – Features of Products Covering Fire and Allied Perils – Products covering Marine and Transit Risks – Products covering Financial Losses due to Accidents – Products covering Financial Losses due to Hospitalization – Products Covering Miscellaneous Risks.

**SUGGESTED READINGS:**

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Guide to Risk Management : SagarSanyal
4. Principles of Insurance : Dr V Padmavathi, Dr V Jayalakshmi - PBP
5. Insurance and Risk Management : P.K. Gupta
6. Insurance Theory and Practice : Tripathi PHI
7. Principles of Insurance Management: Neelam C Gulati, Excel Books
8. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
9. Principles of Risk Management and Insurance: George E Rejda (13<sup>th</sup> Edition)
10. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing, Cincinnati, Ohio

**Suggested Websites:**

- 1) [www.irda.gov.in](http://www.irda.gov.in) 2) [www.policyholder.gov.in](http://www.policyholder.gov.in) 3) [www.irdaindia.org.in](http://www.irdaindia.org.in)

**Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING**

*Objective: To make students to learn Foundation of digital marketing.*

**UNIT I: DIGITAL MARKETING FOUNDATIONS:**

Digital Marketing Strategy – Exploring Digital Marketing – Starting with the Website – Foundations of Analytics – Search Engine Optimization – Search and Display Marketing – Social Media Marketing – Video Marketing.

**UNIT II: OPTIMIZING MARKETING EMAILS, MOBILE MARKETING**

**FOUNDATIONS AND CONTENT MARKETING FOUNDATIONS:**

Email marketing tools and setup – Email marketing segmentation, personalization and mobile friendly design – Content marketing foundations – Blogs for content marketing – Content marketing for staying relevant – Newsletters for content marketing – Mobile marketing foundations.

**SUGGESTED READINGS:**

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Foundations of Digital Marketing: Dr. K.V. NAgaraj.KUsha Rani - PBP
4. Digital Marketing by Vandana Ahuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry

**Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS**

**Objective:** To make students to understand the Fundamentals of Business Analytics.

**UNIT I: USING DATA TO DRIVE BUSINESS DECISIONS:**

Need for data-driven decision making: Solving the business problem using Analytics - Overview of the Business Analytics cycle - Hierarchy of information user - The complete Business Analytics professional: Understanding Business Analyst roles and responsibilities - Identify the Popular Business Analytics Tools.

**UNIT II: DATA ANALYTICS USING EXCEL:**

Basics of Excel: Organizing data with Excel - Performing simple computations and aggregations using Excel - Working with Summing and other Reporting functions in Excel - Working with pivot tables and charts - Using Excel for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips - Display tips - Keyboard shortcuts - Mouse shortcuts - Standardized layouts - Understanding table based and spreadsheet-based layouts - Best practices - Setting data rules and Cleaning data - Format as table - Data cleansing techniques using External Data - Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Query data from SQL - Working in the Select Part of an SQL Query - Managing SQL commands - Managing Tables - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data - Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options

**SUGGESTED READINGS:**

1. Fundamentals of Business Analytics, 2nd Edition; R N Prasad; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Monetizing Your Data: A Guide to Turning Data into Profit-Driving Strategies and Solutions; Andrew Roman Wells, Kathy Williams Chiang; Wiley
4. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
5. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
6. Excel Statistics: A Quick Guide, 3rd edition; Neil J. Salkind; Sage Publications
7. Microsoft Excel 2019: For Beginners; J. Davidson
8. Microsoft Excel 2019: Learn Excel Basics with Quick Examples; James Jackson

**Paper SEC2 (a): PRACTICE OF LIFE INSURANCE**

*Objectives: To make students to learn Practice of Life Insurance.*

**UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE POLICIES AND PREMIUM CALCULATION:** Meaning evolution, growth and principles of Life Insurance –Life Insurance Organizations in India – Competition and Regulation of Life Insurance - Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes. Computation of Premiums - Meaning of Premium, its calculation- Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

**UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITINGS AND FINANCIAL PLANNING & TAX SAVING:** Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis- Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

**SUGGESTED READINGS:**

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance – Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

**Paper SEC2 (b): WEB DESIGN AND ANALYTICS**

**Objective:** To make students to understand the Web Design and Analytics.

**UNIT I: WEB DESIGN AND OPTIMIZING CONVERSION RATES:**

Exploring and learning web design – Understanding Conversion rate optimization (CRO) – Setting CRO – Understanding target audience – Pptimization champion

**UNIT II: GOOGLE ANALYTICS:**

Getting started with Google Analytics – Core concepts – Additional interface features – Using reports – Audience reports – Acquisition reports – Social reports – Behavior reports – Track events – Conversion reports – Additional features

**SUGGESTED READINGS:**

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry
6. Don't Make Me Think Revisited: A Common Sense Approach to Web Usability By Steve Krug
7. Web Analytics 2.0 – Avinash Kaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

**Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS**

*Objective: To make students to understand the Analytics of Application of Business Analytics..*

**UNIT I: STATISTICS USING EXCEL:**

Descriptive statistics using Excel: Describe data using charts and basic statistical measures – Histograms - Pareto charts – Boxplots - Treemap and Sunburst charts - Inferential Statistics using Excel: Correlation and Regression - Probability distribution – Sampling techniques – Hypothesis testing

**UNIT II: GETTING STARTED WITH R:**

Introduction to R and RStudio components: Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R

**SUGGESTED READINGS:**

1. Microsoft Business Intelligence Tools for Excel Analysis; Michael Alexander, Jared Decker, Bernard Wehbe; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
4. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
5. Microsoft Excel Data Analysis for Dummies, 3rd edition; Stephen L. Nelson, E. C. Nelson; Wiley
6. Data Analytics with R; BhartiMotwani; Wiley



**Paper DSC 301: ADVANCED ACCOUNTING**

**Objective:** To acquire accounting knowledge of partnership firms and joint stock companies

**UNIT-I: PARTNERSHIP ACCOUNTS-I:**

Meaning – Partnership Deed - Capital Accounts (Fixed and Fluctuating) – Admission of a Partner – Retirement and Death of a Partner (Excluding Joint Life Policy)(Including problems)

**UNIT-II: PARTNERSHIP ACCOUNTS-II:**

Dissolution of Partnership – Insolvency of a Partner (excluding Insolvency of all partners) – Sale to a Company (Including problems)

**UNIT-III: ISSUE OF SHARES, DEBENTURES, UNDERWRITING AND BONUS SHARES:**

Issue of Shares at par, premium and discount – Pro-rata allotment – Forfeiture and Re-issue of Shares – Issue of Debentures with Conditions of Redemption – Underwriting: Meaning – Conditions- Bonus Shares: Meaning – SEBI Guidelines for Issue of Bonus Shares – Accounting of Bonus Shares(Including problems)

**UNIT-IV: COMPANY FINAL ACCOUNTS AND PROFIT PRIOR TO INCORPORATION:**

Companies Act 2013: Structure – General Instructions for preparation of Balance Sheet and Statement of Profit and Loss – Part-I: Form of Balance Sheet – Part-II: Statement of Profit and Loss – Preparation of Final Accounts of Companies - Profits Prior to Incorporation- Accounting treatment. (Including problems)

**UNIT-V: VALUATION OF GOODWILL AND SHARES:**

Valuation of Goodwill: Need – Methods: Average Profits, Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (Including problems)

**SUGGESTED READINGS:**

1. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
2. Advanced Accountancy: Shukla and Grewal, S.Chand & Co.
3. Advanced Accountancy: R.L.Gupta & Radhaswamy, Sultan Chand & Sons.
4. Advanced Accountancy (Vol-II): S.N.Maheshwari & V.L.Maheshwari, Vikas.
5. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP
6. Accountancy-III: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy: Arulanandam; Himalaya.
8. Accountancy-III: S.P. Jain & K.L Narang, Kalyani Publishers.
9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

**Paper DSC 302: BUSINESS STATISTICS -I**

*Objective: to inculcate analytical and computational ability among the students.*

**UNIT-I: INTRODUCTION:**

Origin and Development of Statistics – Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics.

Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution.

**UNIT – II: DIAGRAMMATIC AND GRAPHIC PRESENTATION:**

Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams – Pictograms – Cartograms Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms.

**UNIT-III: MEASURES OF CENTRAL TENDENCY:**

Introduction –Significance -Arithmetic Mean- Geometric Mean - Harmonic Mean - Mode – Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages.

**UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS:**

Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures - Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation.

Measures of Skewness - Karl Pearson's Coefficient of Skewness - Bowley's Coefficient of Skewness - Kelly's Measure of Skewness – Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis.

**UNIT-V: CORRELATION:**

Meaning -Types - Correlation and Causation – Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method.

**SUGGESTED READINGS:**

1. Statistics for Management: Levin & Rubin, Pearson
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Statistics: E. Narayanan Nadar, PHI Learning
4. Business Statistics –I: Dr. Obul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata McGraw Hill
7. Fundamentals of Statistical: S. P Gupta, Sultan Chand
8. Business Statistics: J. K. Sharma, Vikas Publishers
9. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics - Theory, Methods and Applications: Sancheti D.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Statistics: Andasn,Sweenly,Williams,Cingage.

**Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

**UNIT-I: BASIC CONCEPTS:** Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary - Types of Database. Relational and ER Models: Data Models - Relational Model – Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model – Entities – Attributes – Relationships - More about Entities and Relationships - Defining Relationship for College Database - E-R Diagram - Conversion of E-R Diagram to Relational Database.

**UNIT-II: DATABASE INTEGRITY AND NORMALISATION:** Relational Database Integrity - The Keys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems – Single Valued Dependencies – Normalisation - Rules of Data Normalisation - The First Normal Form - The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation - Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.

**UNIT-III: STRUCTURES QUERY LANGUAGE (SQL):** Meaning – SQL commands - Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by – Where - Group by - Nested Queries. Joins – Views – Sequences - Indexes and Synonyms - Table Handling.

**UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT:** Transactions - Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

**UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES:** Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

**ADVANCED TOPICS:** Overview: Parallel Database - Multimedia Database - Mobile Database - Web Database - Multidimensional Database. Data Warehouse - OLTP Vs OLAP - NoSQL Database.

**LAB: SQL QUERIES BASED ON VARIOUS COMMANDS.**

**SUGGESTED READINGS:** 1) Database Systems: R.Elmasri & S.B. Navathe, Pearson.; 2) Introduction to Database Management System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.; 4) Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.; 5) Database System Concepts: Silberschatz, Korth & Sudarshan, McGraw Hill. 6) Simplified Approach to DBMS: Parteek Bhaia Kalyani Publishers. 7) Database Management System: Nirupma Pathak, Himalaya. 8) Database Management Systems: Pannerselvam, PHI. 9) Relational Database Management System: Srivastava & Srivastava, New Age 10) PHP MySQL Spoken Tutorials by IIT Bombay. 11) Oracle Database: A Beginner's Guide: I.Abramson, McGraw Hill.

**Paper SEC3 (a): PRACTICE OF GENERAL INSURANCE**

*Objective: To make the student understand general policies and accounting.*

**UNIT I: GENERAL INSURANCE POLICIES:**

Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

**UNIT II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:**

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

**SUGGESTED READINGS:**

1. Practice of General Insurance – Insurance Institute of India.
2. Practice of General Insurance – D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy – HPH.
4. Risk Management : A Publication of the Insurance Institute of India.,
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

**Paper SEC3 (b): SOCIAL MEDIA MARKETING**

*Objective: To make students to understand the Social Media Marketing.*

**UNIT I: SOCIAL MEDIA MARKETING:**

Building an online community – Understanding Social Media Marketing – Marketing and building presence on Facebook – Marketing and building presence on Twitter – Employer branding on LinkedIn

**UNIT II: ONLINE ADVERTISING ON SOCIAL MEDIA:**

Facebook advertising overview – How Facebook ads work – How to create Facebook ads – Additional advertising options and best practices for Facebook advertising – Marketing and monetizing on YouTube – Customize your YouTube Channel – Video optimization on YouTube – YouTube Analytics

**SUGGESTED READINGS:**

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Tuten: Social Media Marketing, sage
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Social Media Marketing All-In-One for Dummies By Jan Zimmerman and Deborah Ng
7. Facebook Growth Hacking: How to Correctly Set Up and Maintain Your Facebook Presence and Gain Massive Amounts of Fans (Social Media Marketing) by Jeff Abston
8. Youtube Influencer: How To Become a Youtube Influencer, Why Influencer Marketing Matters, and How To Monetize Your Channel by Jeff Abston

**Paper SEC-3 (c): BUSINESS INTELLIGENCE**

*Objective: To make students to understand the Business Intelligence.*

**UNIT I: BUSINESS INTELLIGENCE USING POWER BI:**

Getting data in Power BI: Overview of Power BI Desktop - Connect to data sources in Power BI Desktop - Clean and transform data with the Query Editor - advanced data import and cleaning techniques - Cleaning irregularly formatted data - Modeling the data: Manage data relationships – Create calculated columns – Optimizing data models – Create calculated measures – Create calculated tables – Explore time-based data - Exploring data: Introduction to the Power BI service - Turn business intelligence data into data insights

**UNIT II: POWER BI AND EXCEL:**

Using Excel data in Power BI: Uploading an Excel workbook with a simple table into Power BI - Upload workbooks created with Excel Power Pivot and Power View - Publishing and sharing: Publish Power BI Desktop reports - Print and export dashboards and reports - Manually republish and refresh data - Power BI Mobile - Create groups in Power BI – Publish to web

**SUGGESTED READINGS:**

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; TeoLachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

**Paper SEC4 (a): REGULATION OF INSURANCE BUSINESS**

*Objective: To equip the students with the knowledge regarding Insurance Business Regulations*

**UNIT I: INSURANCE LEGISLATION IN INDIA:**

History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs—pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combo products.

**UNIT II: POLICY HOLDERS RIGHTS OF ASSAIGNMENT, NOMINATION AND TRANSFER:**

Assignment and transfer of insurance policies—provisions related to nomination—repudiation—Fraud—protection of policyholder interest—stages in insurance policy-presale stage-post sale stage-free look period—grievance redressal—claim settlement—key feature document—dispute resolution mechanism—insurance ombudsman—solvency margin and investments—international trends in insurance regulation.

**SUGGESTED READINGS:**

1. Regulation of Insurance Business – Insurance Institute of India
2. Regulation of Insurance Business – D.S. Vittal, HPH
3. Regulation of Insurance Business: Dr. V. Padmavathi, PBP
4. Risk Management : A Publication of the Insurance Institute of India
5. Insurance Theory and Practice: Tripathi PHI
6. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
7. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
8. South Western College Publishing Cincinnati, Ohio.
9. Insurance Management – S.C. Sahoo& S.C. Das-HPH.

**Paper SEC4 (b): SEARCH ENGINE OPTIMIZATION AND ONLINE ADVERTISING**

**Objective:** To make students to understand the Search engine optimization and online advertising.

**UNIT I: SEO FOUNDATIONS AND SEO KEYWORD STRATEGY:**

Understanding SEO – Keyword strategy – Content optimization – Long-term content planning – Link-building strategies – Measuring SEO effectiveness – SEO for Ecommerce – Local search – Mobile SEO

**UNIT II: GOOGLE ADWORDS AND REMARKETING:**

Pay-Per-Click Advertising – Getting started with Google Adwords – Advertising tracking – Key Google Adwords strategies – Remarketing with Google – Budget and ROI tips – B2B Remarketing Campaigns

**SUGGESTED READINGS:**

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. SEO for Dummies, 6th Edition, by John Kent
6. SEO Fitness Workbook: 2018 Edition: The Seven Steps to Search Engine Optimization Success on Google By Jason McDonald
7. The Art of SEO: Mastering Search Engine Optimization By Eric Enge, Stephan Spencer and Jessie Stricchiola
8. Google Adwords for Beginners: A Do-It-Yourself Guide to PPC Advertising By Cory Rabazinsky, 2015



**Paper SEC-4 (c) DATA VISUALIZATION & STORYTELLING**

**Objective:** To make students to understand the Data visualization & Storytelling.

**UNIT I: DATA VISUALIZATION USING POWER BI:**

Visuals in Power BI: Bar charts – Pie charts – Treemaps – Combination charts – Slicers – Map visualizations – Matrixes and Tables – Scatter charts – Waterfall and funnel charts - Gauges and single-number cards - Modifying visuals and reports: Modify colors in charts and visuals – Add shapes, text boxes, and images to reports - Page layout and formatting - Other Data Visualization features and options: Group interactions among multiple visualizations on the same report page - Summarization and category options – Z-order - Visual hierarchies and drill-down

**UNIT II: TELLING STORIES WITH DATA:**

Data Storytelling: Apply storytelling principles to business analytics - Improve business analytics presentations through storytelling - Creating high-impact reports and presentations: Guidelines and best practices

**SUGGESTED READINGS:**

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; TeoLachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
5. Microsoft Power BI Dashboards Step by Step, Errin O'Connor, Microsoft Press
6. Storytelling with Data: A Data Visualization Guide for Business Professionals; Cole NussbaumerKnaflic; Wiley

**Paper DSC 401: INCOME TAX**

*Objective: To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from different heads with reference to an Individual Assessee.*

**UNIT-I: INTRODUCTION:**

Direct and Indirect Taxes – Canons of Taxation - Features and History of Income Tax in India – Definitions and Basic Concepts of Income Tax: Assessee – Deemed Assessee – Assessee-in-default – Assessment Year – Previous Year - Person – Agricultural Income – Heads of Income – Gross Total Income – Total Income — Incomes Exempt from Tax. Residential Status and Scope of Total Income: Meaning of Residential Status – Conditions applicable to an Individual Assessee – Incidence of Tax – Types of Incomes. (Theory only)

**UNIT-II: INCOME FROM SALARIES:**

Definition of ‘Salary’ – Characteristics of Salary – Computation of Salary Income: Salary u/s 17(1) – Annual Accretion – Allowances – Perquisites – Profits in lieu of Salary – Deductions u/s. 16 – Problems on computation of Income from Salary.

**UNIT-III: INCOME FROM HOUSE PROPERTY:**

Definition of ‘House Property’ – Exempted House Property incomes– Annual Value – Determination of Annual Value for Let-out House and Self-occupied House – Deductions u/s.24 – Problems on computation of Income from House Property.

**UNIT-IV: PROFITS AND GAINS OF BUSINESS OR PROFESSION:**

Definition of ‘Business and Profession’ – Procedure for computation of Income from Business – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

**UNIT-V: CAPITAL GAINS AND INCOME FROM OTHER SOURCES:**

Introduction - Meaning – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – Deemed Transfer –Determination of Cost of Acquisition – Procedure for computation of Long-term and Short-term Capital Gains/Losses – Exemptions in respect of certain Capital Gains u/s. 54 – Problems on computation of capital gains - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, crown world puzzles, Races – Interest on Securities – Gifts received by an Individual – Casual Income – Family Pension – Rent received on let out of Furniture- Plant and Machinery with/without Building – Deductions u/s. 57. (Theory only)

**SUGGESTED READINGS:**

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Taxation: Dr. M.N. Ravi, PBP.
3. Direct Taxes Law & Practice: Dr.Vinod K. Singhanian&Dr.KapilSinghanian, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learning.
8. Direct Tax Law and Practice : AhujaGirish

**Paper DSC 401: EXCEL FOUNDATION**

**Objective:** Students will learn how to start working with M S Excel right from basics to Tables, Templates and Printing of their work.

**UNIT-I: INTRODUCTION TO EXCEL:**

Workbooks and Worksheets, Moving Around a Worksheet, Ribbon tabs, Types of commands on the Ribbon, Using Shortcut Menus, Working with Dialogue Boxes, Task Panes, Getting started on your worksheet, Creating a chart, Printing your worksheet, Saving your worksheet, Exploring Data Types, Modifying Cell Contents, Deleting, Replacing, Editing of a cell. Some handy data entry techniques, Number Formatting.

**UNIT-II: WORKSHEET OPERATIONS:**

Moving and resizing windows, Switching among windows, Activating a worksheet, Adding, Deleting a worksheet, Changing a sheet tab color, Rearranging your worksheets, Hiding, un-hiding a worksheet, Worksheet View, Comparing sheets side by side, Selecting ranges, complete rows and columns, noncontiguous ranges, multi-sheet ranges, special types of cells. Copying or Moving Ranges. Paste Special dialogue box, Adding comments to cells.

**UNIT-III: TABLES AND FORMATTING:**

Creating a Table, Changing the Look of a Table, Navigating in a Table, Selecting parts of a Table, Adding, Deleting new rows or columns, Moving a Table, Working with the Total Row, Removing duplicate rows from a table. Sorting and filtering a table, Converting Table into Range. Formatting tools on the Home tab, Mini Toolbar, Fonts, Text Alignment, Wrapping text to fit a cell, Colors and Shading, Borders and Lines. Naming Styles.

**UNIT-IV: EXCEL FILES & TEMPLATES:**

Creating a New Workbook, Filtering filenames, Saving and Auto Recovery, Password-Protecting a Workbook, Recovering unsaved work, Protect Workbook options, Checking Compatibility. Creating a Excel Templates, Modifying a template, Custom Excel Templates, Default Templates, Editing your Template, Resetting the default workbook, Saving your Custom Templates, Getting ideas for creating Templates.

**UNIT-V: PRINTING YOUR WORK:** Normal, Page Layout, Page Break View, Choosing your printer, Specifying what you want to print, Changing Page Orientation, Specifying paper size, Adjusting page margins, Inserting a page break, Removing manual page breaks, Printing Row and Column Titles, Scaling printed output, Header or Footer Options, Preventing certain cells, Objects from being printed, Creating Custom Views of your Worksheet. Creating PDF files. Introducing Excel:

**SUGGESTED READINGS:**

1. Excel 2013 Bible: John Walkenbach, Wiley.
2. Microsoft Excel 2013: Data Analysis and Business Modeling: Winston, PHI
3. Excel Data Analysis - Modeling and Simulation: Hector Guerrero, Springer.
4. Excel Functions and Formulas: Bernd Held, BPB Publications.
5. Financial Analysis and Modeling using Excel and VBA: ChandanSengupta, Wiley

**Paper DSC 402: BUSINESS STATISTICS - II**

*Objective: To inculcate analytical and computational ability among the students.*

**UNIT-I: REGRESSION:**

Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - Using Regression Lines for Prediction.

**UNIT-II: INDEX NUMBERS:**

Introduction - Uses - Types - Problems in the Construction of Index Numbers - Methods of Constructing Index Numbers - Simple and Weighted Index Number (Laspeyre - Paasche, Marshall – Edgeworth) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

**UNIT-III: TIME SERIES:**

Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

**UNIT-IV: PROBABILITY:**

Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye’s Theorem.

**UNIT-V: THEORITCAL DISTRIBUTIONS:**

Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.  
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.  
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (Areas Method Only).

**SUGGESTED READINGS:**

1. Statistics for Management: Levin & Rubin, Pearson,
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Business Statistics: Theory & Application, P. N. Jani, PHI Learning
4. Business Statics – II: Dr. OBul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata McGraw Hill
7. Fundamentals of Statistical: S. P Gupta , Sultan Chand
8. Business Statistics: J. K. Sharma, Vikas Publishers
9. Business Statistics: Vora, Tata McGraw Hill
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics-Teory, Methods and Applications: SanchetiD.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Business Statistics-G.Laxman, Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

**Paper DSC 403: WEB TECHNOLOGIES**

**Hours Per Week:**7(3T+4P)  
**Exam Hours:**1½

**Credits:** 5  
**Marks:** 50U+35P+15I

**Objective:**To gain skills of usage of Web Technologies to design Web pages.

**UNIT-I: INTRODUCTION:**

Introduction to web technology – HTML – types of HTML tags-basic Structure of HTML – Web design principles – HTML attributes – styles – Hypertext - Formatting text – Forms & formulating instructions & formulation elements – Commenting code – Back grounds – Images- Hyperlinks – Lists – Tables – Frames

**UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:**

An over view of dynamic web pages – technologies: Introduction to Dynamic HTML programming - Cascading style sheets (CSS) – types and advantages of CSS – CSS basic syntax and structure - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

**UNIT-III: JAVA SCRIPT&:**

**Java Script:** Introduction - Client side Java script - Server side Java script - Core features - Data types and variables – Operators - Expressions and statements – Functions – Objects – Array - Date and math related objects - Document object model - Event handling.

**UNIT-IV: EVENTS AND EVENT HANDLERS:**

**Events And Event Handlers:** General information about Events – Event – OnAbort – OnClick - Ondbl click - On drag drop – Onerror - Onfocus - Onkey Press – Onkey Up – Onload - Onmouse Down – Onmouse Move - Onmouse Out – Onmouse Over - Onmove - Onrest – Onresize - Onselect - Onsubmit - Onunload.

**UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML):**

**Extensible Markup Language (XML):** Introduction - Creating XML Documents - XML style Sheet – Hyperlinks in XML Document Object Model - XML Query Language.

**LAB WORK:** CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT- SIDE AND SERVER SIDE SCRIPTING.

**SUGGESTED READINGS:**

1. Web Technology: IndrakantiSekhar, V.N. Battu, Himalaya Publishers.
2. Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
3. Web programming: ChrisBates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson
6. Internet and Web Technologies: Raj Kamal, McGrawHill.
7. Web Technology: A Developer's Perspective: Gopalan&Sivaselvan, PHI.
8. Internet Technology and Web Page Design: R.Singh&M.Sonia, Kalyani.
9. Web Technology and Design by Xavier, New Age International Pub.

**Paper GE: a) BUSINESS ECONOMICS**

*Objective: To acquire knowledge for application of economic principles and tools in business practices.*

**UNIT-I: INTRODUCTION:**

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Law of Diminishing marginal utility - Law of Equi-marginal utility.

**UNIT- II: DEMAND ANALYSIS:**

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticity of Demand

**UNIT-III: SUPPLY ANALYSIS:**

Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

**UNIT-IV: PRODUCTION ANALYSIS:**

Concept of Production –production function-Total Production - Marginal Production - Average Production –returns to a factor- Law of Variable Proportions - Law of Returns to Scale – Isocost – Isoquants - Economies and Dis-economies of Scale.

**UNIT-V: COST AND REVENUE ANALYSIS:**

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves—relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

**SUGGESTED READINGS:**

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: VanithAgrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers
5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

**Paper GE: b) ADVANCED ASPECTS OF INCOME TAX**

**Objective:** To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from certain heads and other provisions relating to clubbing, aggregation of income and assessment procedure.

**UNIT-I: PROFITS AND GAINS OF BUSINESS OR PROFESSION:**

Valuation of Stock Depreciation: Meaning – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation.

**UNIT-II: INCOME FROM OTHER SOURCES:**

Winnings from lotteries Puzzles, crown world puzzles, Races Problems on computation on Income from Other Sources. Treatment of Agricultural Income. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates. Problems on computation of Total Income of an Individual based on Residential Status.

**UNIT-III: CLUBBING AND AGGREGATION OF INCOME:**

Income of other persons included in the total income of Assesse – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income.

**UNIT-IV: ASSESSMENT OF INDIVIDUALS:**

Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability.

**UNIT-V: ASSESSMENT PROCEDURE:**

Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment: Self-assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

**SUGGESTED READINGS:**

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhanian & Dr. KapilSinghanian, Taxmann
3. Income Tax: M. Jeevarathinam & C. Vijay Vishnu Kumar, SCITECH Publications.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: B. Lal, Pearson Education.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learnin

**Paper DSE 501 (a) : COST ACCOUNTING**

**Objective:** To make the students acquire the knowledge of cost accounting methods.

**UNIT-I: INTRODUCTION:**

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting – Cost concepts – Cost Classification.

**UNIT-II: MATERIAL:**

Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods.

**UNIT-III: LABOUR AND OVERHEADS:**

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.  
Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads.

**UNIT-IV: UNIT AND JOB COSTING:**

Unit Costing: Features - Cost Sheet – Tender and Estimated Cost Sheet.  
Job Costing: Features - Objectives – Procedure - Preparation of Job Cost Sheet.

**UNIT-V: CONTRACT AND PROCESS COSTING:**

Contract Costing: Features – Advantages - Procedure of Contract Costing – Guidelines to Assess profit on incomplete Contracts.  
Process Costing: Meaning – Features – Preparation of Process Account – Normal and Abnormal Losses.

**SUGGESTED READINGS:**

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: PrashantaAthma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI
6. Introduction to Cost Accounting: Tulsian, S.Chand
7. Cost Accounting: Horngren, Pearson
8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.



**Paper DSE 501 (b) : FINANCIAL PLANNING & PERFORMANCE**

*Objective: To make students to understand the Financial planning & Performance.*

**UNIT I: STRATEGIC PLANNING:**

Strategic planning: Analysis of external and internal factors affecting strategy - Long-term mission and goals - Alignment of tactics with long-term strategic goals - Strategic planning models and analytical techniques - Characteristics of successful strategic planning process - Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Top-level planning and analysis: Pro forma income - Financial statement projections - Cash flow projections.

**UNIT II: BUDGETING AND FORECASTING:**

Budgeting Concepts: Operations and performance goals - Characteristics of a successful budget process - Resource allocation - Forecasting techniques: Regression analysis - Learning curve analysis - Expected value - Budgeting Methodologies: Annual business plans (master budgets) - Project budgeting - Activity-based budgeting - Zero-based budgeting - Continuous (rolling) budgets - Flexible budgeting

**UNIT III: COST AND VARIANCE ANALYSIS:**

Cost and Variance Analysis: Comparison of actual to planned results - Use of flexible budgets to analyze performance - Management by exception - Standard Cost System: Use of standard cost systems - Analysis of variation from standard cost expectations

**UNIT IV: PERFORMANCE MEASURES:**

Performance Measures: Product profitability analysis - Business unit profitability analysis - Customer profitability analysis - Return on investment - Residual income - Investment base issues - Key performance indicators (KPIs) - Balanced scorecard - Responsibility Centers and Reporting Segments: Types of responsibility centers - Transfer pricing - Reporting of organizational segments

**UNIT V: TECHNOLOGY AND ANALYTICS:**

Information Systems: Accounting information systems - Enterprise resource planning systems - Enterprise performance management systems - Data Governance: Data policies and procedures - Life cycle of data - Controls against security breaches - Technology-enabled finance transformation: System Development Life Cycle - Process automation - Innovative applications  
Data analytics: Business intelligence - Data mining - Analytic tools - Data visualization

**SUGGESTED READINGS:**

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Strategic Management and Business Policy: Globalization, Innovation and Sustainability, 15th edition; Wheelen, Thomas L., et. al.; Prentice Hall
3. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
4. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
5. Quantitative Methods for Business, 13th Edition; Anderson, David, R., Sweeney, Dennis J., Williams, Thomas A., Camm, Jeff, and Martin, R. Kipp; Cengage Learning
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA.

**Paper DSE 501 (c): INTERNATIONAL FINANCIAL REPORTING -I**

*Objective: To make students to understand the International Financial Reporting.*

**UNIT I: GENERAL PURPOSE OF FINANCIAL ACCOUNTING AND REPORTING AS PER US GAAP AND IFRS:**

Conceptual framework: Standard Setting Bodies & Hierarchy - Elements of F/S - Primary objectives of financial reporting - Qualitative Characteristics of F/S - Fundamental Assumptions & Principles - Accounting Cycle & Preparation of F/S - General-purpose financial statements: Balance sheet - Income statement - Statement of comprehensive income - Statement of changes in equity - Statement of changes cash flows - Public company reporting requirements: SEC Reporting Requirements - Interim Financial Reporting - Segment Reporting - Revenue recognition: 5-Step approach to Revenue Recognition - Certain Customer's Rights & Obligations - Specific Arrangements - Long Term Construction Contracts

**UNIT II: CURRENT ASSETS AND CURRENT LIABILITIES (AS PER US GAAP AND IFRS):**

Monetary Current Assets & Current Liabilities: Cash & Cash Equivalents - Accounts Receivable - Notes Receivable - Transfers & Servicing of Financial Assets - Accounts Payable - Employee-related Expenses Payable - Inventory: Determining Inventory & Cost of Goods Sold - Inventory Valuation - Inventory Estimation Methods

**UNIT III: FINANCIAL INVESTMENTS AND FIXED ASSETS (AS PER US GAAP AND IFRS):**

Financial Investments: Investments in Equity Securities - Investment in Debt Securities - Financial Instruments - Tangible Fixed Assets: Acquisition of Fixed Assets - Capitalization of Interest - Costs Incurred After Acquisition - Depreciation - Impairment - Asset Retirement Obligation - Disposal & Involuntary Conversions - Intangible Assets: Knowledge-based intangibles (R&D, software) - Legal rights based intangibles (patent, copyright, trademark, franchise, license, leasehold improvements) - Goodwill

**UNIT IV: FINANCIAL LIABILITIES (AS PER US GAAP AND IFRS):**

Bonds Payable: Types of Bonds - Convertible bonds vs. Bonds with detachable warrants - Bond Retirement - Fair Value Option & Fair Value Election - Debt Restructuring: Settlement - Modification of terms

**UNIT V: SELECT TRANSACTIONS (AS PER US GAAP AND IFRS):**

Fair value measurements: Valuation techniques - Fair value hierarchy - Fair value concepts - Accounting changes and error correction: Changes in accounting estimate - Changes in accounting principle - Changes in reporting entity - Correction of an error - Contingencies: Possibility of occurrence (remote, reasonably possible or probable) - Disclosure vs. Recognition

Derivatives and Hedge Accounting: Speculation (non-hedge) - Fair value hedge - Cash flow hedge - Non-monetary exchanges: Exchanges with commercial substance - Exchanges without commercial substance - Leases: Operating lease - Finance lease - Sale leaseback

**SUGGESTED READINGS:**

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr RammohanBhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18.

**Paper DSE 502 (a) : COMPUTERIZED ACCOUNTING**

**Objective:** To make the students to acquire the knowledge of computer software

**UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP:**

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut a Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

**UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU):**

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

**UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:**

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).

**UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT:**

Introduction-Accounts Payables and Receivables-Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference-Advance-On Account-Stock Category Report-Changing the Financial Year in ERP.

**UNIT V: MIS REPORTS:**

Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable.

**SUGGESTED READINGS:**

1. Computerised Accounting: GarimaAgarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Aakash Business Tools: Spoken Tutorial Project IIT Bombay
5. Mastering Tally: Dinesh Maidasani, Firewal Media
6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
7. Computerised Accounting and Business Systems: Kalyani Publications
8. Manuals of Respective Accounting Packages
9. Tally ERP 9: J.S. Arora, Kalyani Publications.

**Paper DSE 502 (b): FINANCIAL DECISION MAKING - I**

*Objective: To make students to understand the Financial Decision Making.*

**UNIT I: FINANCIAL STATEMENT ANALYSIS**

Basic Financial Statement Analysis: Common size financial statements - Common base year financial statements - Financial Ratios: Liquidity - Leverage - Activity - Profitability - Market Profitability analysis: Income measurement analysis - Revenue analysis - Cost of sales analysis - Expense analysis - Variation analysis - Special issues: Impact of foreign operations - Effects of changing prices and inflation - Off-balance sheet financing - Impact of changes in accounting treatment - Accounting and economic concepts of value and income - Earnings quality

**UNIT II: FINANCIAL MANAGEMENT**

Risk & Return: Calculating return - Types of risk - Relationship between risk and return  
Long-term Financial Management: Term structure of interest rates - Types of financial instruments - Cost of capital - Valuation of financial instruments

**UNIT III: RAISING CAPITAL**

Raising Capital: Financial markets and regulation - Market efficiency - Financial institutions - Initial and secondary public offerings - Dividend policy and share repurchases - Lease financing

**UNIT IV: WORKING CAPITAL MANAGEMENT**

Managing working capital: Cash management - Marketable securities management - Accounts receivable management - Inventory management - Short-term Credit: Types of short-term credit - Short-term credit management

**UNIT V: CORPORATE RESTRUCTURING AND INTERNATIONAL FINANCE**

Corporate Restructuring: Mergers and acquisitions - Bankruptcy - Other forms of restructuring  
International Finance: Fixed, flexible, and floating exchange rates - Managing transaction exposure - Financing international trade - Tax implications of transfer pricing

**SUGGESTED READINGS:**

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Interpretation and Application of International Financial Reporting Standards; Mackenzie, Bruce, Coetsee, Danie, Njikizana, Tapiwa, Chamboko, Raymond, Colyvas, Blaise, and Hanekom, Brandon; Wiley
3. Financial Reporting & Analysis, 13th edition; Gibson, Charles H.; South-Western Cengage Learning
4. Financial Statement Analysis, 10th edition; Subramanyam, K.R., and Wild, John L.; McGraw Hill
5. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill
6. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall

**Paper DSE 502 (c) : INTERNATIONAL TAX & REGULATION**

*Objective: To make students to understand the International Tax & Regulation.*

**UNIT I: TAXATION OF INDIVIDUALS:**

Individual Income Tax Return: Filing Status - Cash basis and Accrual basis

Gross Income: Wages, Salaries, Bonus, Commission, Fees & Tips - Interest & Dividend Income - Business Income - Capital Gains & Losses - Passive Income - Farming Income - Deductions: Adjustments - Deductions from AGI - Calculating Tax: Tax Credits - Alternative Minimum Taxes - Other Taxes - Estimated Tax penalty

**UNIT II: PROPERTY TRANSACTIONS & DEPRECIATION:**

Capital Gains & Losses - Gains & Losses from Sale of Long-term Business Property - Depreciation & Amortization

**UNIT III: TAXATION OF CORPORATIONS:**

C-Corporations: Formation - Income Tax Return - Income - Deductions - Reconciliation of Taxable Income with books - Calculating Tax - Corporate Earnings & Distributions - Corporate Liquidation & Reorganizations - S-Corporations: Eligibility criteria - Income Tax Return - Shareholder basis - Earnings and Distribution - Termination of Election

**UNIT IV: TAXATION OF OTHER ENTITIES:**

Partnerships: Formation - Income Tax Return - Partner basis - Partnership Distributions - Sale of Partnership Interest by a Partner - Termination of Partnership - Estate, Trust & Gift Taxation: Estate and Trust Fiduciary Income Tax Return - Estate Tax Return - Gift Tax Return - Generation-skipping transfer Tax - Tax Exempt Organizations: Formation - Income Tax Return

**UNIT V: STATUTORY REGULATIONS, ACCOUNTANT RESPONSIBILITIES, BUSINESS STRUCTURES:**

Federal Security Regulations: Securities Act of 1933 - Securities Exchange Act of 1934 - Other federal security regulations - Professional & Legal Responsibilities: Accountant Common Law Liabilities - Accountant Statutory Liabilities - Accountant Liabilities for Privileged Information - Accountant Criminal Liabilities - Employment Regulations - Environmental Regulations - Antitrust Regulations - Business Structures: Sole Proprietorships - Partnerships - Corporations

**SUGGESTED READINGS:**

1. Miles CPA Review Concept Book: Regulation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Regulation, Wiley
3. Internal Revenue Code: Income, Estate, Gift, Employment and Excise Taxes, CCH Tax Law Editors
4. Federal Income Tax: Code and Regulations--Selected Sections, Martin B. Dickinson, Wolters Kluwer
5. Federal Income Taxation by Katherine Pratt and Thomas D. Griffith, Wolters Kluwer
6. Federal Income Taxation (Concepts and Insights), Marvin Chirelstein and Lawrence Zelenak, Foundation Press

**Paper DSE 503 (a) :MANAGEMENT INFORMATION SYSTEMS**

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** To equip the students with finer nuances of MIS.

**UNIT-I: INTRODUCTION TO MIS:**

The Technical and Business Perspective, Organization Structure, Evaluation of MIS through Information System, The Decision Making Process , System Approach to Problem Solving, The Structure of Management Information System, MIS Organization within the Company.

**UNIT-II: INFORMATION SYSTEMS FOR DECISION MAKING:**

Evolution of an Information System, Basic Information Systems, Decision Making and MIS, Decision Assisting Information System, Concepts of Balanced MIS Effectiveness and Efficiency Criteria.

**UNIT-III: DEVELOPMENT OF MIS:**

Methodology and Tools/Techniques for Systematic Identification, Evaluation and Modification of MIS. *Enterprise Resource Planning*: Introduction, Basics of ERP, Evolution of ERP, Enterprise Systems in Large Organizations, Benefits and Challenges of Enterprise Systems, *E-Enterprise System* : Introduction: Managing the E-enterprise, Organisation of Business in an E-enterprise, E-business, E-commerce, E-communication, E-collaboration.

**UNIT-IV: ADVANCED MIS:**

Concepts, Needs and Problems in Achieving Advanced MIS, DSS., Business intelligence + process management, systems development, and security.

**UNIT-V: COLLABORATION, IMPACT & PITFALLS IN MIS:**

Collaboration processes and information systems, Impact of Web 2.0 and social media on business process, Pitfalls in MIS Development: Fundamental Weakness, Soft Spots in Planning and Design Problems.

**SUGGESTED READINGS:**

1. Murdic, Rose and Clagett- Information Systems for Modern Management, PHI, New Delhi.
2. Process, Systems, and Information, David M. Kroenke,
3. MIS Cases Decision Making with Application Software, 4th Edition, Lisa Miller
4. Laudon-Laudon- Management Information Systems, Pearson Education, New Delhi.

**Paper DSE 503 (b) :E-COMMERCE**

**Hours Per Week:** 7 (3T+4P)

**Exam Hours:** 1 ½

**Credits:** 5

**Marks:** 50U+35P+15I

*Objective: to acquire conceptual and application knowledge of ecommerce.*

**UNIT-I: INTRODUCTION:**

E-Commerce: Meaning - Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of Ecommerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E-Learning - E-Shopping.

**UNIT-II:FRAMEWORK OF E-COMMERCE:**

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/IP – HTTP - Secured HTTP – SMTP - SSL.

Data Encryption: Cryptography – Encryption – Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

**UNIT-III:CONSUMER ORIENTED E-COMMERCE APPLICATIONS:**

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token-Based E-Payment System - Smart Cards.

**UNIT-IV:ELECTRONIC DATA INTERCHANGE:**

Introduction - EDI Standards - Types of EDI - EDI Applications in Business – Legal - Security and Privacy issues if EDI - EDI and E-Commerce - EDI Software Implementation.

**UNIT-V: E-MARKETING TECHNIQUES:**

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

*Lab work: Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.*

**SUGGESTED READINGS:**

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B Whinston, Pearson
2. E-Commerce: Tulasi Ram Kandula, HPH.
3. E-Commerce: An Indian Perspective: P.T. Joseph, S.J, PHI
4. Electronic Commerce, Framework Technologies & Applications: Bharat Bhasker, McGraw Hill
5. Introduction To E-Commerce: Jeffrey F Rayport, Bernard J. Jaworski: Tata McGraw Hill
6. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
7. E-Commerce & Computerized Accounting: Rajinder Singh, Er. KaisarRasheed, Kalyani
8. E-Commerce & Mobile Commerce Technologies: Pandey, SaurabhShukla, S. Chand
9. E-Business 2.0, Roadmap For Success: Ravi Kalakota, Marcia Robinson, Pearson
10. Electronic Commerce: Pete Loshin / John Vacca, Firewall Media
11. E-Commerce, Strategy, Technologies And Applications : David Whiteley, Tata Mcgraw Hill

## Paper DSE 503 (c) :MOBILE APPLICATIONS

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

*Objective: To understand and apply the mobile applicatios.*

### **UNIT-I: INTRODUCTION:**

What is Android, Android versions and its feature set The various Android devices on the market, The Android Market application store ,Android Development Environment - System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs), the Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime – Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,

### **UNIT-II: MOBILE SOFTWARE:**

Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project , Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application, Android Application Components, Android Activities: Defining the UI, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components.

Android Manifest XML: Declaring Your Components, Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool.

### **UNIT-III: MOBILE DISPLAY:**

Displaying Text with TextView, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with SeekBar, Working with Menus using views, Gallery, ImageSwitcher, GridView, and ImageView views to display images, Creating Animation, Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access to a Data Source through a Content Provider, Content Provider Registration, Native Content Providers

### **UNIT-IV: MOBILE APPLICATIONS:**

Intent Overview, Implicit Intents, Creating the Implicit Intent Example Project, Explicit Intents, Creating the Explicit Intent Example Application, Intents with Activities, Intents with Broadcast Receivers, An Overview of Threads, The Application Main Thread, Thread Handlers, A Basic Threading Example, Creating a New Thread, Implementing a Thread Handler, Passing a Message to the Handler. Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email, Introduction to location-based service, configuring the Android Emulator for Location-Based Services, Geocoding and Map-Based Activities,Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures



**UNIT-V: MOBILE APP DEVELOPMENT & INSTALLATION:**

Introduction to Windows Phone App Development, Installing the Windows Phone SDK, Creating Your First XAML for Windows Phone App. Understanding the Role of XAP Files, the Windows Phone Capabilities Model, the Threading Model for XAML-Based Graphics and Animation in Windows Phone, Understanding the Frame Rate Counter, The Windows Phone Application Analysis Tool, Reading Device Information, Applying the Model-View-ViewModel Pattern to a Windows Phone App, Property Change Notification, Using Commands

**SUGGESTED READINGS:**

1. Erik Hellman, “Android Programming – Pushing the Limits”, 1st Edition, Wiley India Pvt Ltd, 2014.
2. Dawn Griffiths and David Griffiths, “Head First Android Development”, 1st Edition, O’Reilly SPD Publishers, 2015
3. J F DiMarzio, “Beginning Android Programming with Android Studio”, 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
4. AnubhavPradhan, Anil V Deshpande, “ Composing Mobile Apps” using Android, Wiley 2014, ISBN: 978-81-265-4660-2

**Web Resource :**

Google Developer Training, "Android Developer Fundamentals Course – Concept Reference”, Google Developer Training Team, 2017. <https://www.gitbook.com/book/google-developer-training/android-developerfundamentals-course-concepts/details> (Download pdf file from the above link)

## Paper PR : RESEARCH METHODOLOGY & PROJECT REPORT

*Objective: To introduce the basics of conducting research in social sciences.*

### UNIT-I: INTRODUCTION, MEASUREMENT AND HYPOTHESIS TESTING:

Meaning of Research-Steps involved- Identification of Problem- Steps involved in the selection of problem-Research Design-Meaning and Types- Measurement Levels/Scales - Scaling Techniques-Hypothesis-Meaning - Types – Testing Procedure.

### UNIT-II:PARAMETRIC AND NON PARAMETRIC TESTS AND RESEARCH REPORT:

Introduction - t-Test - F-Test - Chi Square Test - Anova (One-Way Anova, Two-Way Anova).concepts only Contents of a Research Report.

### SUGGESTED READINGS:

1. Research Methodology: Himalaya Publications.
2. Methodology of Research in Social Sciences: Krishna Swamy,
3. Research Methodology: Kothari &Garg, New Age Publication
4. Research Methodology: Paneerselvam R, PHI
5. Research Methodology: Dr Vijay Upagade& Dr ArvindShende, S. Chand Publications
6. Research Methodology: Ranjit Kumar, Pearson Publication
7. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
8. Research Methodology: Sashi.K Gupta, PraneethRangi, Kalyani Publishers.

## GUIDELINES FOR PROJECT WORK

- 1) Project work is a part of the prescribed curriculum to B. Com students.
- 2) Project work is allotted to a group of 4 students.
- 3) During the IV semester, students are expected to undergo internship at a business firm/ Government Department /Software organization/Voluntary organization as per the guidance of teacher concerned.
- 4) Students should get a certificate from the organization.
- 5) At the end of Semester-VI, the project reports would be evaluated by the external examiner designated by the Controller of Examinations, from the panel submitted by the Board of Studies in Commerce. The Examiner would evaluate the project reports for a maximum of 35 marks and conduct Viva-Voce examination for 15 marks. The award lists duly signed would be sent the Controller of Examinations.
- 6) Examiners will examine the following in the project report: i) Survey/Analysis on the topic chosen; ii) Method of data collection; iii) Presentation: Style, Comprehensiveness, graphs, charts etc.; iv) Analysis and inference and implications of the study; v) Bibliography.
- 7) Students must ensure that they maintain **regular contact with their supervisor** and also that they provide the supervisor with drafts of their work at regular intervals.
- 8) Students are required to submit a project report on a topic related/connected with trade, industry & commerce. Project can be done by taking the information from the select organization focusing on areas like marketing, finance, human resource, operations, general management etc.

- 9) Project should be a practical, in-depth study of a problem, issue, opportunity, technique or procedure or some combination of these aspects of business. The Students are required to define an area of investigation, assemble relevant data, analyse the data, draw conclusions and make recommendations.

## ORGANISATION OF PROJECT REPORT

1) Project report should be presented in the following sequence:

- i) Title page; ii) Student's declaration; iii) Supervisor's certificate; iv) Internship certificate; v) Abstract; vi) Acknowledgements; vii) Table of contents; viii) List of tables; ix) List of figures; x) List of appendices.

2) Chapter Design should be as follows:

**Chapter-I: Introduction:** this chapter includes the research problem, need for study/significance of the project, objectives, methodology (hypotheses, statistical tools, data source, scope, sample, chapter design).

**Chapter-II: Company Profile:** this chapter should contain a brief historical retrospect about the entity of your study.

**Chapter-III: Data Analysis and interpretation:** this chapter should present the data analysis and inferences.

**Chapter-IV: Summary and Conclusions:** This Chapter should give an overview of the project, conclusions, implications, recommendations and scope for further research.

**Bibliography:** lists the books, articles, and websites that are referred and used for research on the topic of the specific project. Follow Harvard style of referencing.

**Appendices:** the data, used to prepare the tables for analysis, may not be feasible to incorporate as part of chapters, may given as appendices.

## TECHNICAL SPECIFICATIONS OF THE PROJECT

- 1) Project should be typed on **A4 white paper**, and be **1.5 spaced**.
- 2) All pages should be **numbered**, and numbers should be placed at the centre of the bottom of the page.
- 3) **All tables, figures and appendices** should be consecutively numbered or lettered, and suitably labeled.
- 4) **3 bound copies&a soft-copy** should be handed in to the **principal/director of your college/institute** at the time of submission.
- 5) **bibliography and referencing: Referencing** is necessary to avoid plagiarism, to verify quotations and to enable readers to follow-up and read more fully the cited author's arguments. Reference is given within the text of the project as well as at the end of the project. The basic difference between citation and a reference list (bibliography) is that the latter contains full details of all the in-text citations.
  - **Citation** provides brief details of the author and date of publication for referencing the work in the body of the text.
  - **Reference list** is given at the end of the text and is a list of all references used with additional details provided to help identify each source.

Proper referencing is as crucial aspect of your project. You are therefore strongly advised to talk to your supervisor about this, in order to make sure that your project report follows the appropriate referencing system.

**Paper DSE 601 (a) : COST CONTROL AND MANAGEMENT ACCOUNTING**

**Objective:** To be acquaint with Cost Control techniques, Managerial Accounting decision-making techniques and reporting methods.

**UNIT-I: INTRODUCTION TO MANAGEMENT ACCOUNTING & MARGINAL COSTING:**

Meaning and Importance of Management Accounting – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing – Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance - Limitations. Marginal Costing for Decision Making-Make or Buy – Add or Drop Products – Sell or Process Further – Operate or Shut-down – Special Order Pricing – Replace or Retain.

**UNIT-II: BUDGETARY CONTROL AND STANDARD COSTING:**

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets - Budgetary Control - Classification of Budgets - Preparation of Fixed and Flexible Budgets. Standard Costing: Meaning – Importance – Standard Costing and Historical Costing - Steps involved in Standard Costing. Variance Analysis: Material variance - Labour variance - Overhead variance .

**UNIT-III: TECHNIQUES OF FINANCIAL STATEMENT ANALYSIS:**

Meaning – Objectives - Techniques: Comparative Statement, Common Size Statement, Trend Analysis. Ratios- Meaning , Objectives and Classification—Computation of Activity, Liquidity, Solvency and Profitability Ratios.

**UNIT-IV: FUNDS FLOW ANALYSIS:**

Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds.

**UNIT-V: CASH FLOW ANALYSIS (AS-3):**

Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement.

**SUGGESTED READINGS:**

1. Management Accounting- Principles & Practice: Sharma RK & Shashi K. Gupta, Kalyani
2. Advanced Managerial Accounting: Srihari Krishna Rao, Himalaya
3. Advanced Managerial Accounting: Dr. Sundaram, PBP
3. Advanced Management Accounting: Robert S. Kaplan & Anthony A. Atkinson, Prentice-Hall
4. Management Accounting: Rustagi R.P, Galgotia
5. Managerial Accounting: Ronald W. Hilton, TMH

**Paper DSE 601 (b) : FINANCIAL CONTROL**

*Objective: To make students to understand the Financial Control.*

**UNIT I: EXTERNAL FINANCIAL REPORTING DECISIONS (AS PER US GAAP & IFRS):**

Financial Statements: Balance sheet - Income statement - Statement of Comprehensive Income - Statement of changes in equity - Statement of cash flows - Integrated reporting

**UNIT II: RECOGNITION, MEASUREMENT, VALUATION, AND DISCLOSURE (AS PER US GAAP & IFRS) :**

Assets, Liabilities & Equity: Asset valuation - Valuation of liabilities - Equity transactions - Income: Revenue recognition - Income measurement - Major differences between U.S. GAAP and IFRS

**UNIT III: COST MANAGEMENT:**

Measurement concepts: Cost behavior and cost objects - Actual and normal costs - Standard costs - Absorption (full) costing - Variable (direct) costing - Joint and by-product costing - Costing Systems: Joint and by-product costing - Job order costing - Process costing - Activity-based costing - Life-cycle costing -Overhead costs: Fixed and variable overhead expenses - Plant-wide versus departmental overhead -Determination of allocation base - Allocation of service department costs

**UNIT IV: SUPPLY CHAIN MANAGEMENT AND BUSINESS PROCESS IMPROVEMENT:**

Supply chain management: Lean resource management techniques - Enterprise resource planning (ERP) - Theory of constraints - Capacity management and analysis - Business Process Improvement: Value chain analysis - Value-added concepts - Process analysis, redesign, and standardization - Activity-based management - Continuous improvement concepts - Best practice analysis - Cost of quality analysis - Efficient accounting processes

**UNIT V: INTERNAL CONTROLS:**

Governance, Risk & Compliance: Internal control structure and management philosophy - Internal control policies for safeguarding and assurance - Internal control risk - Corporate governance - External audit requirements - System Controls & Security Measures: General accounting system controls - Application and transaction controls - Network controls - Backup controls - Business continuity planning

**SUGGESTED READINGS:**

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Intermediate Accounting, 17th edition; Kieso, Donald E., Weygandt, Jerry J., and Warfield, Terry D.; Wiley
3. Intermediate Accounting, 11th edition; Nikolai, Loren A., Bazley John D., and Jones, Jefferson P., South-Western Cengage Learning
4. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
5. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

**Paper DSE 601(c) :INTERNATIONALFINANCIAL REPORTING - II**

*Objective: To make students to understand the International Financial Reporting.*

**UNIT I: PENSIONS & POST-EMPLOYMENT BENEFITS (AS PER US GAAP & IFRS):**

Defined contribution pension plans - Defined benefit pension plans: Pension obligations - Pension plan assets - Net pension expense - Other Post-retirement benefits

**UNIT II: INCOME TAXES (AS PER US GAAP & IFRS):**

Income tax expense: Current income tax expense - Deferred income tax expense - Deferred taxes on balance sheet: Deferred tax assets - Deferred tax liabilities - Specific accounting - considerations: Net Operating Losses (NOL) - Investee's undistributed dividends

**UNIT III: EQUITY (AS PER US GAAP & IFRS):**

Equity accounts: Common Stock - Preferred Stock - Additional Paid-In Capital - Retained Earnings - Accumulated Other Comprehensive Income - Treasury Stock - Specific accounting considerations: Share-based Payments to Employees - Equity Securities Classified as Debt Presentation of Equity: On Balance sheet - On Statement of Changes in Equity - Earnings per Share (EPS): Basic EPS - Diluted EPS

**UNIT IV: SELECT TRANSACTIONS (AS PER US GAAP & IFRS):**

Business Combinations and Consolidations: Acquisitions - Non-controlling Interest - Intercompany Transactions - Variable Interest Entities (VIE) - Foreign currency: Remeasurement - Translation

**UNIT V: NOT-FOR-PROFIT AND GOVERNMENTAL ACCOUNTING AND REPORTING (AS PER US GAAP):**

Not-for-Profit (NFP) Entities: NFP Financial Statements - Contribution Revenue - Specific Accounting Considerations - Colleges and Universities - Voluntary Health and Welfare Organizations - Health Care Organizations - Governmental Entities: Fund types (Governmental funds, Proprietary funds, Fiduciary funds) - Modified Accrual Accounting - Inter-fund transactions - Government Financial Reporting

**SUGGESTED READINGS:**

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr RammohanBhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18

**Paper DSE 602(a) : THEORY AND PRACTICE OF GST**

**Objective:** To equip the students with the knowledge regarding Theory and Practice of GST.

**UNIT I: INTRODUCTION TO GST:**

Introduction – GST - Taxes Subsumed under GST -Determination of Tax - Registration -Process of Registration - Cancellation and renovation of registration - Supply of Goods and Services - Transition to GST - Registered Business -Availed Input Tax Credit -Unavailed CENVAT credit and Input VAT on capital goods-Availing the input credit held in closing stock -Invoicing -Tax Invoice -Bill of Supply - Credit Note, Debit Note and Supplementary Invoice-Transportation of goods without issue of Invoice - Input Credit Mechanism - Input Tax - GST Returns - Payment of Tax.

**UNIT II: GETTING STARTED WITH GST:**

Introduction - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods-Intrastate Inward Supply -Intrastate Outward Supply -Interstate -Interstate Outward Supply - Return of Goods -Purchase Returns -Sales Returns -Supplies Inclusive of Tax -Defining Tax Rates at Master and Transaction Levels - Defining GST Rates at Stock Group Level-Defining GST Rate at Transaction Level -Hierarchy of Applying Tax Rate Details –Reports.

**UNIT III: RECORDING ADVANCED ENTRIES, GST ADJUSTMENT AND RETURN FILING:**

Introduction -Accounting of GST Transactions -Purchases from Composition Dealer -Purchases from Unregistered Dealers-Exports -Imports -Exempted Goods -SEZ Sales -Advance Receipts and payments - Mixed Supply and Composite Supply under GST -Mixed Supply of Goods -Composite Supply of Goods -GST Reports - Generating GSTR- Report in ERP -Input Tax Credit Set Off -GST Tax Payment -Time line for payment of GST tax -Modes of Payment -Challan Reconciliation -Exporting GSTR- return and uploading in GST portal.

**UNIT IV: GETTING STARTED WITH GST (SERVICES):**

Introduction -Determination of supply of services -Determining the Place of Supply of Services -Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods - Intrastate Inward Supply-Intrastate Outward Supply -Interstate Supply -Interstate Outward Supply - Interstate Inward Supply -Interstate Outward Supply of Services -Cancellation of Services -Cancellation of Inward Supplies -Cancellation of Outward Supply of Services -Defining Tax Rates at Master and Transaction Levels.

**UNIT V: RECORDING ADVANCED ENTRIES AND MIGRATION TO ERP:**

Introduction - Accounting Multiple Services in a Single Supply - Recording Partial Payment to Suppliers -Outward Supplies - Recording Outward Supply with Additional Expenses - Supply of services -Business to consumers - Time of Supply of Services - Place of Supply of Services - Determining place of supply of services - Exempt Supply of Services under GST -Export Supply of Services - Reverse Charge on Services under GST - Advance Receipts from Customers under GST - Advance Receipt and issuing Invoice on same month -Advance Receipt and issuing Invoice on different month - Reversal of GST on account of cancellation of advance receipt - Generating GSTR- Report in ERP - Input Tax Credit Set Off - Migration to ERP - Activate Goods and Services Tax (GST) in ERP - Set up GST rates - Update Masters - Update party GSTIN/UIN - Creation of GST Duty ledgers.

**SUGGESTED READINGS:**

1. Taxmann's Basics of GST
2. Taxmann's GST: A practical Approach
3. Theory & Practice of GST, Srivathsala, HPH
4. Theory & Practice of GST: Dr. Ravi M.N, PBP.

**Paper DSE 602(b) : FINANCIAL DECISION MAKING - II**

*Objective: To make students to understand the Financial Decision Making.*

**UNIT I: DECISION ANALYSIS:**

Cost/volume/profit analysis: Breakeven analysis - Profit performance and alternative operating levels - Analysis of multiple products - Marginal Analysis: Sunk costs, opportunity costs and other related concepts - Marginal costs and marginal revenue - Special orders and pricing - Make versus buy - Sell or process further - Add or drop a segment - Capacity considerations

**UNIT II: PRICING:**

Pricing decisions: Pricing methodologies - Target costing - Elasticity of demand - Product life cycle considerations - Market structure considerations

**UNIT III: RISK MANAGEMENT:**

Enterprise Risk: Types of risk - Risk identification and assessment - Risk mitigation strategies - Managing risk

**UNIT IV: INVESTMENT DECISIONS:**

Capital budgeting process: Stages of capital budgeting - Incremental cash flows - Income tax considerations - Evaluating uncertainty - Capital investment method analysis: Net present value - Internal rate of return - Payback - Comparison of investment analysis methods

**UNIT V: PROFESSIONAL ETHICS:**

Business ethics: Moral philosophies and values - Ethical decision making - Ethical considerations for management accounting and financial management professionals: IMA's Statement of Ethical Professional Practice - Fraud triangle - Evaluation and resolution of ethical issues - Ethical considerations for the organization: Organizational factors and ethical culture - IMA's Statement on Management Accounting, "Values and Ethics: From Inception to Practice" - Ethical leadership - Legal compliance - Responsibility for ethical conduct - Sustainability and social responsibility.

**SUGGESTED READINGS:**

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
3. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
4. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill
5. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall
6. Enterprise Risk Management - Integrated Framework; COSO, The Committee of Sponsoring Organizations of the Treadway Commission, 2017



**Paper DSE 602 (c) : INTERNATIONAL AUDITING**

*Objective: To make students to understand the International Auditing.*

**UNIT I: ETHICS, PROFESSIONAL RESPONSIBILITIES AND GENERAL AUDITING**

**PRINCIPLES:**

Introduction to Auditing: Generally Accepted Auditing Standards (GAAS) - International Standards of Auditing (ISA) - Ethics, independence and professional conduct: AICPA Code of Professional Conduct - Sarbanes-Oxley Act (SOX), 2002 - Public Company Accounting Oversight Board (PCAOB) - Securities & Exchange Commission (SEC) - International Standards - Engagement Understanding and Acceptance: Pre-Engagement Acceptance Activities - Engagement Letter - Auditor's communication with those charged with governance

Quality Control: Statements on Quality Control Standards (SQCS) - Elements of a System of Quality control

**UNIT II: ASSESSING AUDIT RISK AND DEVELOPING A PLANNED RESPONSE:**

Audit Risk: Inherent Risk - Control Risk - Detection Risk - Fraud Risk: Fraudulent financial reporting - Misappropriation of assets - Fraud risk factors - Auditor's consideration of fraud

Planning the Audit: Audit Strategy - Audit Plan - Internal Controls: Auditor's Consideration of Internal Control - Operating Cycles - Internal Control Reports and Communications

**UNIT III: PERFORMING FURTHER PROCEDURES AND OBTAINING AUDIT EVIDENCE:**

Audit Evidence: Management's Assertions - Sufficient & Appropriate Audit Evidence - Audit Evidence determined by Risk of Material Misstatement (RMM) - Substantive Procedures: Revenue cycle - Expenditure cycle - Production cycle - Payroll cycle - Investing cycle - Financing cycle - Opening Balances - Illegal Acts - Related Parties - Contingencies - Estimates & Fair Value Measurements - Subsequent Events - Omitted Procedures & Subsequent Discovery of Facts - Using the Work of Others - Evaluating Audit Findings - Audit Documentation - Management Representation Letter - Audit Sampling: Sampling Risks - Attributes Sampling - Classical Variables Sampling - Probability Proportional to Size (PPS) Sampling

**UNIT IV: AUDIT REPORTING:**

Audit Reports: Unmodified opinion - Unmodified Opinion with Emphasis-of-matter and/or Other-matter paragraph - Qualified Opinion - Adverse Opinion - Disclaimer of Opinion - Audit Reporting Considerations: Audit of Comparative financial statements - Supplementary Information - Audit of Group financial statements - Audit of Single financial statements & Specific financial statement elements, accounts or items - Audit of Special Purpose financial statements - Audit of financial statements prepared using financial reporting framework of another country

**UNIT V: OTHER ENGAGEMENTS:**

Accounting & Review Services: Preparation of financial statements - Compilation engagement - Review engagement - Attestation Engagements: Examination - Review - Agreed-upon Procedures - Governmental Auditing: Governmental Auditing Standards - Single Audit Act

**SUGGESTED READINGS:**

1. Miles CPA Review Concept Book: Auditing and Attestation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Auditing and Attestation, Wiley
3. Wiley Practitioner's Guide to GAAS: Covering all SAS, SSAE's , SSARS, PCAOB, Auditing Standards, and Interpretations, Joanne M. Flood, Wiley
4. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning
5. Principles of Auditing & Other Assurance Services, Ray Whittington and Kurt Pany, McGraw Hill
6. Auditing & Assurance Services: A Systematic Approach, William F Messier Jr, Steven M. Glover and Douglas F. Prawitt, McGraw Hill.

**Paper DSE 603(a) :MULTIMEDIA SYSTEMS**

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** To acquire the knowledge of multimedia systems.

**UNIT-I: MEDIA AND DATA STREAMS:**

Properties of multimedia systems, Data streams characteristics: Digital representation of audio, numeric instruments digital interface Bark concepts, Devices, Messages, Timing Standards Speech generation, analysis and transmission.

**UNIT-II: DIGITAL IMAGE&ANIMATIONS:**

**Digital Image:** Analysis, recognition, transmission, **Video:** Representation, Digitalization, transmission.

**Animations:** Basic concepts, animation languages, animations control transmission.

**UNIT-III: DATA COMPRESSION STANDARDS&STORAGE:**

**Data Compression Standards:** JPEG, H-261, MPEG DVI

**Optical storage devices and Standards:** WORHS, CDDA, CDROM, CDWO, CDMO.

Real Time Multimedia, Multimedia file System.

**UNIT-IV: MULTIMEDIA COMMUNICATION SYSTEM, DATABASES&SYNCHRONIZATION:**

**Multimedia Communication System:** Collaborative computing session management, transport subsystem, QOS, resource management.

**Multimedia Databases:** Characteristics, data structures, operation, integration in a database model.

**Synchronization:** Issues, presentation requirements, reference to multimedia synchronization, MHEG.

**UNIT-V: MULTIMEDIA APPLICATION:**

Media preparation, Composition, integration communication, consumption, entertainment.

**SUGGESTED READINGS:**

1. Ralf Steninmetz, KlaraHahrstedt, *Multimedia: Computing, Communication and Applications*, PHI PTR Innovative Technology Series.
2. John F.KoegelBufford, *Multimedia System*, Addison Wesley, 1994.
3. Mark Elsom – Cook, *Principles of Interactive Multimedia*, Tata Mc-Graw Hill, 2001.
4. Judith Jefcoate, *Multimedia in Practice: Technology and Application*, PHI 1998.

**Paper DSE 603(b) :CYBER SECURITY**

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** to understand the cyber security, detection, network security, the law and cyber forensic.

**UNIT-I: INTRODUCTION TO CYBER SECURITY, CYBER SECURITY VULNERABILITIES AND CYBER SECURITY SAFEGUARDS:**

**Introduction to Cyber Security:** Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

**Cyber Security Vulnerabilities:** Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

**Cyber Security Safeguards:** Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

**UNIT-II: SECURING WEB APPLICATION, SERVICES AND SERVERS:**

Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

**UNIT-III: INTRUSION DETECTION AND PREVENTION:**

Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

**UNIT-IV: CRYPTOGRAPHY AND NETWORK SECURITY:**

Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec.

**UNIT-V: CYBERSPACE AND THE LAW, CYBER FORENSICS:**

**Cyberspace and The Law:** Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.

**Cyber Forensics:** Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

**SUGGESTED READINGS:**

1. Ramandeepkaurnagra, Cyber laws and Intellectual Property Rights, Kalyani Publishers, 7e,
2. Nina Godbole&SunitBelapureCyber Security, Wiley India Pvt Ltd, 2012.
3. Gerald. R. Ferrera, Reder and lichtenstein, Cyber laws – Text and Cases,3e, Cengage learning
4. FaiyazAhamed, Cyber Law and Information Security, DreamTech Press, 2013
5. PankajAgarwal, Information Security and Cyber Laws, Acme Learning, 2013
6. Manjotkaur, Essentials of E-Business and Cyber laws, Kalyani Publishers.

**Paper DSE 603(c) :DATA ANALYTICS**

**Hours Per Week:** 7 (3T+4P)

**Credits:** 5

**Exam Hours:** 1 ½

**Marks:** 50U+35P+15I

**Objective:** To learn the different ways of data Analysis, data streams, mining and clustering and visualization.

**UNIT-I: INTRODUCTION TO BIG DATA:**

Introduction to Big Data Platform – Challenges of conventional systems – Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting – Modern data analytic tools, Stastical concepts: Sampling distributions, resampling, statistical inference, prediction error.

**UNIT-II: DATA ANALYSIS:**

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics – Rule induction – Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods.

**UNIT-III: MINING DATA STREAMS:**

Introduction to Streams Concepts – Stream data model and architecture – Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Realtime Analytics Platform(RTAP) applications – case studies – real time sentiment analysis, stock market predictions.

**UNIT-IV: FREQUENT ITEMSETS AND CLUSTERING:**

Mining Frequent item sets – Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

**UNIT-V: FRAMEWORKS AND VISUALIZATION:**

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases – S3 – Hadoop Distributed file systems – Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications:

**SUGGESTED READINGS:**

- 1) Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
- 2) AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets,Cambridge University Press, 2012.
- 3) Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analystics, John Wiley & sons, 2012.
- 4) Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007 Pete Warden, Big Data Glossary, O'Reilly, 2011.
- 5) Jiawei Han, MichelineKamber “Data Mining Concepts and Techniques”, Second Edition, Elsevier, Reprinted 2008.

**TELANGANA STATE COUNCIL OF HIGHER EDUCATION**

**B.Sc. (Computer Science) Course Structure**

(Common Core Syllabus for All Universities of Telanagana State for the Students Admitted from the Academic Year: 2019-20 Batch Onwards)

**CBCS Pattern in Semester System – 2019**

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
DSC – I	I	Programming in C	4	3	4 + 1 = 5
DSC – II	II	Programming in C++	4	3	4 + 1 = 5
DSC – III	III	Data Structures Using C++	4	3	4 + 1 = 5
DSC – IV	IV	Data Base Management Systems (DBMS)	4	3	4 + 1 = 5
DSC – V	V	Programming in Java	4	3	4 + 1 = 5
DSC – VI	VI	Web Technologies	4	3	4 + 1 = 5

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
SEC – I	III	Python – I	2		2
SEC – II	III	Operating Systems - I	2		2
SEC – III	IV	Python – II	2		2
SEC – IV	IV	Operating Systems - II	2		2

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
AECC	I	Fundamentals of Computer	2		2
AECC	II	Office Automation	2		2

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
GENERAL ELECTIVE (GE)	IV	Information Technologies	4		4

**PROJECT / OPTINAL**

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
PROJECT / OPTINAL	VI	PHP with MYSQL	3	3	3 + 1 = 4

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

### UNIT – I

**Computer Fundamentals:** Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

**Program Fundamentals:** Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.

**Algorithms:** Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

**Basics of C:** Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

### UNIT – II

**Input-Output:** Non-formatted and Formatted Input and Output Functions, Escape Sequences,

**Control Statements:** Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

**Arrays and Strings:** One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

### UNIT – III

**Functions:** Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.

**Pointers:** Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

### UNIT – IV

**User-defined Data Types:** Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types.

**Files:** Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

**Text Book:** Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

### Reference Books:

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How To Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

1. Write a program to find the largest two (three) numbers using if and conditional operator.
2. Write a program to print the reverse of a given number.
3. Write a program to print the prime number from 2 to n where n is given by user.
4. Write a program to find the roots of a quadratic equation using switch statement.
5. Write a program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*****
*****
```

6. Write a program to find largest and smallest elements in a given list of numbers.
7. Write a program to find the product of two matrices
8. Write a program to find the GCD of two numbers using iteration and recursion
9. Write a program to illustrate use of storage classes.
10. Write a program to demonstrate the call by value and the call by reference concepts
11. Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
12. Write a program to illustrate use of data type enum.
13. Write a program to demonstrate use of string functions string.h header file.
14. Write a program that opens a file and counts the number of characters in a file.
15. Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
16. Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

**Note:**

1. Write the Pseudo Code and draw Flow Chart for the above programs.
2. Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.

**Programming in C++ (Semester – II)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

**UNIT – I**

**Introduction to C++:** Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

**Functions:** Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

**Object Oriented Programming:** Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

**UNIT – II**

**Classes:** Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading, Object Conversion, Aggregation.

**UNIT – III**

**Inheritance:** Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Class Hierarchies, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

**C++ Streams:** Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

**UNIT – IV**

**Exceptions:** Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception, Handling the bad\_alloc Exception.

**Templates:** Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance, Introduction to the STL.

**Text Book:** Tony Gaddis, Starting out with C++: from control structures through objects (7e)

**References:**

1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++



**C++ – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Write a program to print the sum of digits of a given number.
2. Write a program to check whether the given number is Armstrong or not
3. Write a program to print the prime number from 2 to n where n is natural number given.
4. Write a program to find largest and smallest elements in a given list of numbers and sort the given list.
5. Write a program to read the student name, roll no, marks and display the same using class and object.
6. Write a program to implement the dynamic memory allocation and de-allocation using new and delete operators using class and object.
7. Write a program to find area of a rectangle, circle, and square using constructors.
8. Write a program to implement copy constructor.
9. Write a program using friend functions and friend class
10. Write a program to implement default Constructor.
11. Write a program to implement parameterized Constructor
12. Write a program to implement Copy Constructor
13. Write a program to define the constructor inside/outside of the class
14. Write a program to implement all three constructors within a single class as well as use multiple classes( individual classes)
15. Write a program to implement the following concepts using class and object
  - a. Function overloading
  - b. Operator overloading (unary/binary(+ and -))
16. Write a program to demonstrate single inheritance, multilevel inheritance and multiple inheritances.
17. Write a program to implement the overloaded constructors in inheritance.
18. Write a program to implement the polymorphism and the following concepts using class and object.
  - a. Virtual functions
  - b. Pure virtual functions
19. Write a program to implement the virtual concepts for following concepts
  - a. Constructor (not applied)
  - b. Destructor (applied)
20. Write a program to demonstrate static polymorphism using method overloading.
21. Write a program to demonstrate dynamic polymorphism using method overriding and dynamic method dispatch.
22. Write a program to implement the template (generic) concepts
  - a. Without template class and object
  - b. With template class and object

**Note:**

1. Write the Pseudo Code and draw Flow Chart for the above programs.
2. Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.

## Data Structures using C++ (Semester – III)

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

### UNIT – I

**Basic data Structure:** Introduction to Data Structures, Types of Data Structures, and Introduction to Algorithms, Pseudo code, and Relationship among data, data structures, and algorithms, Implementation of data structures, Analysis of Algorithms.

**Stacks:** Concept of Stacks and Queues, Stacks, Stack Abstract Data Type, Representation of Stacks Using Sequential Organization (Arrays), Multiple Stacks, Applications of Stack, Expression Evaluation and Conversion, Polish notation and expression conversion, Processing of Function Calls, Reversing a String with a Stack, Recursion.

### UNIT – II

**Recursion:** Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Recursive Functions, Iteration versus Recursion.

**Queues:** Concept of Queues, Queue as Abstract Data Type, Realization of Queues Using Arrays, Circular Queue, Multi-queues, Dequeue, Priority Queue, Applications of Queues,

**Linked Lists:** Introduction, Linked List, Linked List Abstract Data Type, Linked List Variants, Doubly Linked List, Circular Linked List, Representation of Sparse Matrix Using Linked List, Linked Stack, Linked Queue.

### UNIT – III

**Trees:** Introduction, Types of Trees, Binary Tree, Binary Tree Abstract Data Type, Realization of a Binary Tree, Insertion of a Node in Binary Tree, Binary Tree Traversal, Other Tree Operations, Binary Search Tree, Threaded Binary Tree, Applications of Binary Trees.

**Searching and Sorting:** Search Techniques-Linear Search, Binary Search, Sorting Techniques-Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort, Comparison of All Sorting Methods, Search Trees: Symbol Table, Optimal Binary Search Tree, AVL Tree (Height-balanced Tree).

### UNIT – IV

**Graphs:** Introduction, Representation of Graphs, Graph Traversal – Depth First Search, Breadth First Search, Spanning Tree, Prim’s Algorithm, Kruskal’s Algorithm.

**Hashing:** Introduction, Key Terms and Issues, Hash Functions, Collision Resolution Strategies, Hash Table Overflow, Extendible Hashing

**Heaps:** Basic Concepts, Implementation of Heap, Heap as Abstract Data Type, Heap Sort, Heap Applications.

### Text Book:

1. Varsha H. Patil “Data structures using C++” Oxford University press, 2012
2. M.T. Goodrich, R. Tamassia and D. Mount, Data Structures and Algorithms in C++, John Wiley and Sons, Inc., 2011.

### References:

1. Adam Drozdek “Data structures and algorithm in C++” Second edition, 2001
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms, 2nd Ed., Prentice-Hall of India, 2006.
3. Robert L. Kruse and A.J. Ryba, Data Structures and Program Design in C++, PrenticeHall, Inc., NJ, 1998.
4. B. Stroustrup, The C++ Programming Language, Addison Wesley, 2004
5. D.E. Knuth, Fundamental Algorithms (Vol. I), Addison Wesley, 1997

**Data Structures using C++ – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Write C++ programs to implement the following using an array
  - a) Stack ADT
  - b) Queue ADT
2. Write a C++ program to implement Circular queue using array.
3. Write C++ programs to implement the following using a single linked list.
  - a) Stack ADT
  - b) Queue ADT
4. Write a C++ program to implement Circular queue using Single linked list.
5. Write a C++ program to implement the double ended queue ADT using double linked list.
6. Write a C++ program to solve tower of Hanoi problem recursively
7. Write C++ program to perform the following operations:
  - a) Insert an element into a binary search tree.
  - b) Delete an element from binary search tree.
  - c) Search for a key in a binary search tree.
8. Write C++ programs for the implementation tree traversal technique BFS.
9. Write a C++ program that uses recursive functions to traverse a binary search tree.
  - a) Pre-order
  - b) In-order
  - c) Post-order
10. Write a C++ program to find height of a tree.
- 11 Write a C++ program to find MIN and MAX element of a BST.
- 12 Write a C++ program to find Inorder Successor of a given node.
13. Write C++ programs to perform the following operations on B-Trees and AVL Trees.
  - a) Insertion
  - b) Deletion
- 14 Write C++ programs for sorting a given list of elements in ascending order using the following sorting methods.
  - a) Quick sort
  - b) Merge sort
15. Write a C++ program to find optimal ordering of matrix multiplication.
16. Write a C++ program that uses dynamic programming algorithm to solve the optimal binary search tree problem
17. Write a C++ program to implement Hash Table
18. Write C++ programs to perform the following on Heap
  - a) Build Heap
  - b) Insertion
  - c) Deletion
19. Write C++ programs to perform following operations on Skip List
  - a) Insertion
  - b) Deletion
20. Write a C++ Program to Create a Graph using Adjacency Matrix Representation.
21. Write a C++ program to implement graph traversal techniques
  - a) BFS
  - b) DFS
22. Write a C++ program to Heap sort using tree structure.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

## Data Base Management Systems (Semester – IV)

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

### UNIT – I

**Introduction:** Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

### UNIT – II

**Database Design and the E-R Model:** Overview of the Design Process, The Entity- Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data, Other Aspects of Database Design.

**Relational Database Design:** Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional- Dependency Theory, Decomposition Using Multivalued Dependencies, Normal Forms-2 NF, 3 NF, BCNF, The Database Design Methodology for Relational Databases.

### UNIT – III

**Introduction to SQL:** Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Modification of the Database.

**Intermediate SQL:** Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

**Advanced SQL:** Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

### UNIT – IV

**Transaction Management:** Transaction Support–Properties of Transactions, Database Architecture, Concurrency Control–The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Time Stamping Methods, Multi-version Timestamp Ordering, Optimistic Techniques, Granularity of Data Items, Database Recovery–The Need for Recovery, Transactions and Recovery, Recovery Facilities, Recovery Techniques, Nested Transaction Model.

**Security:** Database Security–Threats, Computer-Based Controls–Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

### Text book:

1. Silberschatz, H. Korth and S. Sudarshan, Database System Concepts, 6th Ed., Tata McGraw Hill, 2011
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems–A Practical Approach to Design, Implementation, and Management (6e)

**Data Base Management Systems – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.  
LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price),  
IssuedBooks (Accession number, Borrower)
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) Delete the record of book titled “Database System Concepts”.
  - c) Change the Department of the book titled “Discrete Maths” to “CS”.
  - d) List all books that belong to “CS” department.
  - e) List all books that belong to “CS” department and are written by author “Navathe”.
  - f) List all computer (Department=”CS”) that have been issued.
  - g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.
  
2. Create a database having three tables to store the details of students of Computer Department in your college.  
Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)  
Paper Details (Paper code, Name of the Paper)  
Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
  - c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
  - d) Find the total attendance and total marks obtained by each student.
  - e) List the name of student who has got the highest marks in paper2.
  
3. Create the following tables and answer the queries given below:  
Customer (CustID, email, Name, Phone, ReferrerID)  
Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)  
BicycleModel(ModelNo, Manufacturer, Style)  
Service (StartDate, BicycleID, EndDate)
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) List all the customers who have the bicycles manufactured by manufacturer “Honda”.
  - c) List the bicycles purchased by the customers who have been referred by Customer “C1”.
  - d) List the manufacturer of red colored bicycles.
  - e) List the models of the bicycles given for service.
  
4. Create the following tables, enter at least 5 records in each table and answer the queries given below.  
Employee (Person\_Name, Street, City )  
Works (Person\_Name, Company\_Name, Salary)  
Company (Company\_Name, City)  
Manages (Person\_Name, Manager\_Name )

- a) Identify primary and foreign keys.
  - b) Alter table employee, add a column “email” of type varchar(20).
  - c) Find the name of all managers who work for both Samba Bank and NCB Bank.
  - d) Find the names, street address and cities of residence and salary of all employees who work for “Samba Bank” and earn more than \$10,000.
  - e) Find the names of all employees who live in the same city as the company for which they work.
  - f) Find the highest salary, lowest salary and average salary paid by each company.
  - g) Find the sum of salary and number of employees in each company.
  - h) Find the name of the company that pays highest salary.
5. Create the following tables, enter at least 5 records in each table and answer the queries given below.
- Suppliers (SNo, Sname, Status, SCity)  
Parts (PNo, Pname, Colour, Weight, City)  
Project (JNo, Jname, Jcity)  
Shipment (Sno, Pno, Jno, Qunatity)
- a) Identify primary and foreign keys.
  - b) Get supplier numbers for suppliers in Paris with status>20.
  - c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
  - d) Get suppliers names for suppliers who do not supply part P2.
  - e) For each shipment get full shipment details, including total shipment weights.
  - f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
  - g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
  - h) Get the names of cities that store more than five red parts.
  - i) Get full details of parts supplied by a supplier in Hyderabad.
  - j) Get part numbers for part supplied by a supplier in Warangal to a project in Chennai.
  - k) Get the total number of project supplied by a supplier (say, S1).
  - l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).
6. Write a PL/SQL Program to demonstrate Procedure.
  7. Write a PL/SQL Program to demonstrate Function.
  8. Write a PL/SQL program to Handle Exceptions.
  9. Write a PL/SQL Program to perform a set of DML Operations.
  10. Create a View using PL/SQL program.
  11. Write a PL/SQL Program on Statement Level Trigger.
  12. Write a PL/SQL Program on Row Level Trigger.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**Programming in Java (Semester – V)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

**UNIT - I**

**Introduction:** Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Structure of Java Program, Type Casting, Conditional Statements, Loops, Classes, Objects, Class Declaration, Creating Objects.

**UNIT - II**

Method Declaration and Invocation, Method Overloading, Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. Class Variables & Method-static Keyword, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

**Inheritance:** Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

**Packages:** Creating and Using Packages, Access Protection, Wrapper Classes, String Class, StringBuffer Class.

**UNIT - III**

**Exception:** Introduction, Types, Exception Handling Techniques, User-Defined Exception.

**Multithreading:** Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

**Input/Output:** Introduction, java.io Package, File Streams, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

**UNIT - IV**

**Applets:** Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output (Graphics Class).

**Event Handling:** Introduction, Types of Events, Example.

**AWT:** Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts.

**Swings:** Introduction, Differences between Swing and AWT, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, JTable.

**Text Book:**

1. Sachin Malhotra, SaurabhChoudhary, Programming in Java (2e)

**References:**

1. Bruce Eckel, Thinking in Java (4e)
2. Herbert Schildt, Java: The Complete Reference (9e)
3. Y. Daniel Liang, Introduction to Java Programming (10e)
4. Paul Deitel, Harvey Deitel, Java: How To Program (10e)
5. Cay S. Horstmann, Core Java Volume I –Fundamentals (10e)

**Programming in Java – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write a menu driven program for following:
  - a. Display a Fibonacci series
  - b. Compute Factorial of a number
4. Write a program to check whether a given number is odd or even.
5. Write a program to check whether a given string is palindrome or not.
6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
10. Write java program for the following matrix operations:
  - a. Addition of two matrices
  - b. Transpose of a matrix
11. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
12. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
13. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
14. Write a java program to draw a line between two coordinates in a window.
15. Write a java program to display the following graphics in an applet window.
  - a. Rectangles
  - b. Circles
  - c. Ellipses
  - d. Arcs
  - e. Polygons
16. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
17. Write a program for the following string operations:
  - a. Compare two strings
  - b. concatenate two strings
  - c. Compute length of a string
18. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.



**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1 = 5 Credits**

### **UNIT – I**

**Introduction To XHTML:** Introduction, first HTML, Headings, Linking, Images, special characters and horizontal rules, Lists, Tables, Frames, Forms, internal linking, meta Elements. CASCADING STYLE SHEETS – Introduction, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking external sheets, position Elements, box model and text flow, media types, building a CSS drop-down menu, user style sheets, CSS3.

### **UNIT – II**

**Introduction To Java Scripting:** Introduction, simple program, prompt dialog and alert boxes, memory concepts, operators, decision making, control structures, if... else statement, while, counter-controlled repetitions, switch statement, do... while statement, *break* and *continue* statements. Functions – program modules in JavaScript, programmer-defined functions, functions definition, scope rules, global functions, Recursion.

### **UNIT – III**

**Arrays:** Introduction, declaring and allocating arrays, references and reference parameters, passing arrays to functions. Multidimensional arrays, **EVENTS**–registering event handling, event onload, onmouseover, onmouseout, onfocus, onblur, onsubmit, onreset, event bubbling, more events. **JAVA SCRIPT OBJECTS** – introduction to object technology, Math Object, String Object, Date Object, Boolean and Number Object, document and window Objects, using cookies.

### **UNIT – IV**

**XML :** Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

**Ajax-Enabled Rich Internet Applications:** introduction, history of Ajax, traditional web applications Vs Ajax Applications, RIAs with Ajax, Ajax example using XMLHttpRequest object, XML and DOM, creating full scale Ajax-enabled application, Dojo Toolkit.

### **Text Book:**

1. Internet & World Wide Web: HOW TO PROGRAM- H. M. Deitel, P.J. Deitel, -Fourth Edition- Pearson edition.

**Web Technologies – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Write a HTML program using basic text formatting tags, <p>, <br>, <pre>.
2. Write a HTML program by using text formatting tags.
3. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
4. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
5. Write a HTML program using different list types.
6. Create a HTML page that displays ingredients and instructions to prepare a recipe.
7. Write a HTML program using grouping elements <div> and <span>.
8. Write a HTML Menu page for Example cafe site.
9. Write a HTML program using images, audios, videos.
10. Write a HTML program to create your time table.
11. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
12. Write a HTML program to create frames and links between frames.
13. Write a HTML program to create different types of style sheets.
14. Write a HTML program to create CSS on links, lists, tables and generated content.
15. Write a HTML program to create your college web site using multi column layouts.
16. Write a HTML program to create your college web site using for mobile device.
17. Write a HTML program to create login form and verify username and password.
18. Write a JavaScript program to calculate area of rectangle using function.
19. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
20. Write a JavaScript program using switch case?
21. Write a JavaScript program to print multiplication table of given number using loop.
22. Write a JavaScript programs using any 5 events.
23. Write a JavaScript program using JavaScript built in objects.
24. Write a JavaScript program to create registration Form with Validations.
25. Write a XML Program to represent Student Data using DTD.
26. Write a XML Program to represent Data using XML Schema Definition.

**Fundamental of Computers (Semester – I)**

**Theory: 2 Hrs/Wk**

**AECC**

**Total Credits: 2 Credits**

**UNIT-I**

**Introduction to Computers:** what is a computer, characteristics of Computers, Generations of Computers, Classifications of Computers, Basic Computer organization, Applications of Computers. Input and Output Devices: Input devices, Output devices, Softcopy devices, Hard copy devices. Computer Memory and Processors: Introduction, Memory Hierarchy, Processor, Registers, Cache memory, primary memory, secondary storage devices, magnetic tapes, floppy disks, hard disks, optical drives, USB flash drivers, Memory cards, Mass storage devices, Basic processors architecture.

**UNIT-II**

**Number System and Computer Codes:** Binary number system, working with binary numbers, octal number system, hexadecimal number system, working with fractions, signed number representation in binary form, BCD code, other codes. Boolean algebra and logic gates: Boolean algebra, Venn diagrams, representation of Boolean functions, logic gates, logic diagrams and Boolean expressions using karnaugh map. Computer Software: Introduction to computer software, classification of computer software, system software, application software, firmware, middleware, acquiring computer software, design and implementation of correct, efficient and maintainable programs.

**Text Book:**

Reema Thareja, Fundamentals of Computers.

**References:**

1. V.Rajaraman, 6<sup>th</sup> Edition Fundamentals of Computers, Neeharika Adabala.
2. Anita Goel, Computer Fundamentals.

**Office Automation (Semester – II)**

**Theory: 2 Hrs/Wk**

**AECC**

**Total Credits: 2 Credits**

**UNIT-I**

**MS-Office:** Introduction to MS-Office, MS-Word: Word Basics, working with formatted text, Shortcut keys, Formatting documents: Selecting text, Copying & moving data, Formatting characters, changing cases, Paragraph formatting, Indents, Drop Caps, Using format painter, Page formatting, Header & footer, Bullets & numbering, Tabs, Forming tables. Finding & replacing text, go to (F5) command, proofing text (Spell check, Auto correct), Reversing actions, Macros, Inserting pictures, Hyperlinks, Mail merging, Printing documents.

**UNIT-II**

**Spreadsheets,** workbooks, creating, saving & editing a workbook, Renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace, Adding and deleting rows and columns Filling series, fill with drag, data sort, Formatting worksheet, Functions and its parts, Some useful Functions in excel (SUM, AVERAGE, COUNT, MAX, MIN, IF), Cell referencing (Relative, Absolute, Mixed), What-if analysis Introduction to charts: types of charts, creation of charts, printing a chart, printing worksheet.

**Presentation** Software, Uses, Presentation tips, components of slide, templates and wizards, using template, choosing an auto layout, using outlines, adding subheadings, editing text, formatting text, using master slide, adding slides, changing color scheme, changing background and shading, adding header and footer, adding clip arts and auto shapes. Various presentation, Working in slide sorter view (deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, viewing slide show, Printing slides.

**Text Book:**

1. Computer Fundamentals – P.K. Sinha.
2. Introduction to Computers – N. Subramanian.
3. Introduction to Computers – Peter Norton Mcgraw Hill.
4. Fundamentals of Computers, by RemaTharaja, Oxford University Press India, 2014.
5. MS–Office \_ BPB Publications.

**Python - I (Semester – III)**

**Theory: 2 Hrs/Wk**

**SEC – I**

**Total Credits: 2 Credits**

**UNIT – I**

**Introduction to Python Programming:** How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output. Decision Structures and Boolean Logic: if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables. Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

**UNIT – II**

**Functions:** Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, Local Variables, Passing Arguments to Functions, Global Variables and Global Constants, Value-Returning Functions- Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules. File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

**Text Book:**

Tony Gaddis, Starting Out With Python (3e)

**References:**

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

**Operating Systems - I (Semester – III)**

**Theory: 2 Hrs/Wk**

**SEC – II**

**Total Credits: 2 Credits**

**UNIT - I**

**Operating System:** Introduction, The Operating System As A Resource Manager, History Of Operating Systems, The Operating System Zoo(Classifications), Operating System Concepts, System Calls, Operating System Structure(Architecture).

**PROCESS:** Creation, Hierarchies, States, THREADS- Usage, The Classical Thread Model, POSIX Threads, Pop-Up Threads.

**UNIT - II**

**Scheduling:** Introduction, Scheduling in Batch Systems, Scheduling in Interactive Systems, Scheduling in Real-Time Systems, Policy versus Mechanism, Thread Scheduling.

**Memory Management:** No Memory Abstraction, Memory Abstraction-Address Spaces, Virtual Memory, Page Replacement Algorithms, Design Issues for Paging Systems, Segmentation.

**Text book:**

1. A.S. Tanenbaum, and Herbert Bos, “Modern Operating Systems”, 4th Ed., Prentice-Hall of India, 2015.

**References:**

1. William Stallings, Operating Systems: Internals and Design Principles, 5th Ed., Prentice-Hall of India, 2006.
2. Gary Nutt, Operating Systems: A Modern Approach, 3rd Ed., Addison Wesley, 2004.
3. D.M. Dhamdhere, Operating Systems: A Concept Based Approach, 2nd Ed., Tata McGraw-Hill, 2007.

**Python - II (Semester – IV)**

**Theory: 2 Hrs/Wk**

**SEC – III**

**Total Credits: 2 Credits**

**UNIT – I**

**Lists and Tuples:** Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists, Two-Dimensional Lists, Tuples. **Strings:** Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings. **Dictionaries and Sets:** Dictionaries, Sets, Serializing Objects.

**Recursion:** Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms.

**UNIT – II**

**Object-Oriented Programming:** Procedural and Object-Oriented Programming, Classes, Working with Instances, Techniques for Designing Classes, Inheritance, Polymorphism.

**GUI Programming:** Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets, Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons.

**Text Book:**

Tony Gaddis, Starting Out With Python (3e)

**References:**

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

**Operating Systems - II (Semester – IV)**

**Theory: 2 Hrs/Wk**

**SEC – IV**

**Total Credits: 2 Credits**

**UNIT - I**

**FILE SYSTEMS:** Files, Directories, File System Implementation, File-SystemManagement and Optimization, Example File Systems.

**INPUT/OUTPUT:** Principles Of I/O Hardware, Principles Of I/O Software, I/O Software Layers, Disks, Clocks, User Interfaces: Keyboard, Mouse, Monitor, Thin Clients, Power Management.

**UNIT- II**

**DEADLOCKS:** Resources, Introduction to Deadlocks, Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention.

**SECURITY:** The Security Environment, Operating Systems Security, Formal Models ofSecure Systems, Authentication, Insider Attacks, Malware, Defenses.

**Text book:**

1. A.S. Tanenbaum, and Herbert Bos, “Modern Operating Systems”, 4th Ed., Prentice- Hall of India, 2015.

**References:**

1. William Stallings, Operating Systems: Internals and Design Principles, 5th Ed., Prentice-Hall of India, 2006.
2. Gary Nutt, Operating Systems: A Modern Approach, 3rd Ed., Addison Wesley, 2004.
3. D.M. Dhamdhere, Operating Systems: A Concept Based Approach, 2nd Ed., Tata McGraw-Hill, 2007.



**Information Technologies (Semester – IV)**

**Theory: 4 Hrs/Wk**

**General Elective**

**Total Credits: 4 Credits**

**UNIT – I**

**Computer Networks:** Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.

**The Internet:** Internet Services, Types of Internet Connections, Internet Security.

**Introduction to Emerging Computer Technologies:** Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On-demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

**UNIT – II**

**Email:** Functions of Email, Browser, Web Browser, Internet Service Providers.

**Introduction to Information Security:** Need for Information Security, Threats to Information Systems, Information Assurance, Cyber Security.

**Introduction to Application Security and Counter Measures:** Introduction to Application Security, Data Security Considerations, Security Technologies, Security Threats, Security Threats to E-Commerce, E-Cash and Electronic Payment System.

**UNIT – III**

**Introduction to Security Measures:** Secure Information System Development Application Development Security Information Security Governance and Risk Management , Security Architecture and Design Security Issues in Hardware, Data Storage, and Downloadable Devices , Physical Security of IT Assets Backup Security Measures

**UNIT – IV**

**Introduction to Security Policies and Cyber Laws:** Need for an Information Security Policy, Information Security Standards – ISO, Introducing Various Security Policies and Their Review Process , Introduction to Indian Cyber Law Objective and Scope of the IT Act, 2000, Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright Law Related to Semiconductor Layout and Design , Software Licence

**Text Books:**

Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, Introduction to Information Security and Cyber Laws (Dreamtech Publication)

**Theory: 4 Hrs/Wk (3 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 3+1= 4 Credits**

### **UNIT – I**

**Introducing PHP:** What is PHP? Why use PHP? Evolution of PHP, Installing PHP, Other ways to run PHP, Creating your first script. PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants. Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping with HTML. Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings. Arrays – Creating Arrays, Accessing Array Elements, Looping through Arrays with for-each,

### **UNIT – II**

Creating Function, Reading Data in Web pages: setting up web pages to communicate with PHP, Handling Text Fields, Text Areas, Checkboxes, Radio Buttons, List Boxes, Password Controls, Image Maps, File Uploads, Buttons, and PHP Browser.

Object oriented programming: creating Classes and objects, setting access to properties and methods, constructors, destructors, Inheritance, overriding and overloading methods, auto loading classes.

### **UNIT – III**

**Advanced OOP:** Static members and inheritance, Abstract classes, Interfaces, object iteration, comparing objects, class constants, final keyword, reflection.

File Handling: fopen, feof, fgets, closing a file, fgetc, file\_get\_contents, reading a file into an array with file, file\_exists, filesize, fread, fscanf, parse\_ini\_file, stat, fseek, copy, unlink, fwrite, reading and writing binary files, appending a file, file\_put\_contents, locking files

### **UNIT – IV**

**Introducing Databases and SQL:** Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL from PHP. Retrieving Data from MySQL with PHP, Retrieving Data with SELECT, Creating a Member Record Viewer. Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records, Building a Member Registration Application. Sessions, Cookies and FTP.

### **Text Books:**

1. Steven Holzner, "PHP: The Complete Reference Paperback", McGraw Hill Education (India), 2007.
2. Timothy Boronczyk, Martin E. Psinas, "PHP and MYSQL (Create-Modify-Reuse)", Wiley India Private Limited, 2008.

**PHP with MYYSQL – Lab**

**Practical: 3 Hrs/Wk (1 Credit)**

1. Write a PHP script to display the Fibonacci sequence with HTML page.
2. Write a PHP script to create a chess board.
3. Write a PHP script using built-in string function like strstr(), strpos(), substr\_count(), etc...
4. Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first Character uppercase.
5. Write a PHP script to count number of elements in an array and display a range of array elements.
6. Write a PHP script using a function to display the entered string in reverse.
7. Write a PHP script to demonstrate inheritance.
8. Write a PHP script to demonstrate the object overloading with \_get(), \_set(), and \_call().
9. Write a PHP script to demonstrate the method overloading and method overriding mechanisms.
10. Write a PHP script to demonstrate the use of final classes and final methods.
11. Write a PHP script to demonstrate the use of interfaces.
12. Write a PHP script using constructors and destructors.
13. Write a PHP application to handling HTML forms with PHP script.
14. Write a PHP script to create a file, write data into file and display the file's data.
15. Write a PHP script to check and change file permissions, copying, renaming and deleting files.
16. Write a PHP application for connecting to MySQL and reading data from database table.
17. Write a PHP application for inserting, updating, deleting records in the database table.
18. Develop a PHP application for student registration form.
19. Develop a PHP application for creating, updating, reading and deleting the Student records from MYSQL Database.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- External Vice-Voce is compulsory.

**B.Sc. (Computer Science)**  
**Model Question Paper (4 – Credits)**

**Time : 3 Hours**

**Max Marks : 80**

**PART -A**

**Answer any EIGHT questions in part –A**

**8 x 4 M = 32 Marks**

**UNIT- I**

- 1
- 2
- 3

**UNIT- II**

- 4
- 5
- 6

**UNIT- III**

- 7
- 8
- 9

**UNIT- IV**

- 10
- 11
- 12

**PART – B**

**Answer All Questions**

**12 x 4 = 48 Marks**

**UNIT- I**

- 13
- OR**
- 14

**UNIT- II**

- 15
- OR**
- 16

**UNIT- III**

- 17
- OR**
- 18

**UNIT- IV**

- 19
- OR**
- 20

**B.Sc. (Computer Science)  
Practical Question Paper (1 – Credit)**

**Time: 3 Hours**

**Max Marks: 25**

**Answer any TWO questions (15 Marks)**

UNIT – I                      1 Program

UNIT – II                     1 Program

UNIT – III                    1 Program

UNIT – IV                    1 Program

Viva – 5 Marks

Record – 5 Marks

**TELANGANA STATE COUNCIL OF HIGHER EDUCATION**

**B.Sc./BA (Computer Applications) Course Structure**

(Common Core Syllabus for All Universities of Telanagana State for the Students Admitted from the Academic Year: 2019-20 Batch Onwards)

**CBCS Pattern in Semester System – 2019**

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
DSC – I	I	Programming in C	4	3	4 + 1 = 5
DSC – II	II	Programming in C++	4	3	4 + 1 = 5
DSC – III	III	Relational Data Base Management Systems	4	3	4 + 1 = 5
DSC – IV	IV	Multi Media Systems	4	3	4 + 1 = 5
DSC – V	V	Programming in Java	4	3	4 + 1 = 5
DSC – VI	VI	Web Technologies	4	3	4 + 1 = 5

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
SEC – I	III	Python – I	2		2
SEC – II	III	Sci Lab - I	2		2
SEC – III	IV	Python – II	2		2
SEC – IV	IV	Sci Lab - II	2		2

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
AECC	I	Fundamentals of Computer	2		2
AECC	II	Office Automation	2		2

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
GENERAL ELECTIVE (GE)	IV	Information Technologies	4		4

**PROJECT / OPTINAL**

Paper	Semester	Course Title	Hours / week		Credits
			Theory	Practical	
PROJECT / OPTINAL	VI	Information Security and Cyber Laws	3	3	3 + 1 = 4

**Programming in C (Semester – I)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1= 5**

**Credits**

**UNIT – I**

**Computer Fundamentals:** Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

**Program Fundamentals:** Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.

**Algorithms:** Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

**Basics of C:** Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

**UNIT – II**

**Input-Output:** Non-formatted and Formatted Input and Output Functions, Escape Sequences,

**Control Statements:** Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

**Arrays and Strings:** One and Two Dimensional Arrays, Character Arrays, Functions from ctype.h, string.h.

**UNIT – III**

**Functions:** Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.

**Pointers:** Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation.

**UNIT – IV**

**User-Defined Data Types:** Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Structures verses Unions, Enumeration Types.

**Files:** Introduction, Using Files, Working with Text Files and Binary Files, Other File Management Functions.

**Text Book:** Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

**Reference Books:**

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How To Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

**C – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Write a program to find the largest two numbers using if and conditional operator
2. Write a program to calculate arithmetic operations of two numbers using switch
3. Write a program to print the reverse of a given number
4. Write a program to print whether the given number is a prime or not.
5. Write a program to find largest and smallest elements in a given list of numbers.
6. Write a program to find the sum of two matrices.
7. Write a program to find the product of two matrices.
8. Write a program to print the reverse of a string.
9. Write a program to find the factorial of a positive integers using iteration and recursion
10. Write a program to find the GCD of two positive integers using iteration and recursion.
11. Write a program to demonstrate the call by value and the call by reference concepts.
12. Write a program to illustrate the use of Enumeration data type.
13. Write a program to illustrate the use of structure concept.
14. Write a program to illustrate the use of union concept.
15. Write a program to write content into a file and display contents of a file
16. Write a program to copy content of one file into another file and display the content of new file.

**Note:**

1. Write the Pseudo Code and draw Flow Chart for the above programs.
2. Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.



**Programming in C++ (Semester – II)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credits)**

**Total Credits: 4+1= 5 Credits**

**UNIT – I**

**Introduction to C++:** Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

**Functions:** Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

**UNIT – II**

**Object Oriented Programming:** Procedural Programming versus Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

**Classes:** Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading.

**UNIT – III**

**Inheritance:** Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

**C++ Streams:** Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

**UNIT – IV**

**Exceptions:** Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

**Templates:** Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance.

**Text Book:** Tony Gaddis, Starting out with C++: from control structures through objects (7e)

**Reference Books:**

1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++

1. Write a program to print the sum of digits of a given number.
2. Write a program to check whether the given number is Armstrong or not.
3. Write a program to check whether the given string is Palindrome or not.
4. Write a program to read student name, roll no, marks and display the same using class and object.
5. Write a program to find area of a rectangle, circle, and square using class and object.
6. Write a program to implement inline function inside and outside of a class for
  - a. Finding the area of a square
  - b. Finding the area of a cube
7. Write a program to implement friend function and friend class.
8. Write a program to implement constructor and destructor with in a class.
9. Write a program to demonstrate hierarchical inheritance.
10. Write a program to demonstrate multiple inheritances.
11. Write a program to demonstrate the constructor overloading.
12. Write a program to demonstrate static polymorphism.
13. Write a program to demonstrate dynamic polymorphism.
14. Write a program to implement polymorphism using pure virtual functions.
15. Write a program to demonstrate the function templates and class templates.
16. Write a program to demonstrate exception handling using try, catch, and finally.

**Note:**

1. Write the Pseudo Code and draw Flow Chart for the above programs.
2. Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.

**Relational Database Management Systems (Semester – III)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1= 5 Credits**

**UNIT-I**

**Basic Concepts:** Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

**Relational and ER Models:** Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

**UNIT-II**

**Database Integrity And Normalisation:** Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalisation, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

**File Organization:** Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

**UNIT-III**

**Structures Query Language (SQL):** Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

**Advanced SQL:** Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

**UNIT-IV**

**Transactions and Concurrency Management:** Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

**Database Recovery and Security:** Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

**Text Book:**

1. Database Systems: R.Elmasri& S.B. Navathe, Pearson.

**References:**

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan&J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames&H.Topi, Pearson.

**Relational Database Management Systems – Lab**

**Practical: 3 Hrs/Wk (1 Credits)**

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.  
LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price),  
IssuedBooks (Accession number, Borrower)
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) Delete the record of book titled “Database System Concepts”.
  - c) Change the Department of the book titled “Discrete Maths” to “CS”.
  - d) List all books that belong to “CS” department.
  - e) List all books that belong to “CS” department and are written by author “Navathe”.
  - f) List all computer (Department=”CS”) that have been issued.
  - g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.
  
2. Create a database having three tables to store the details of students of Computer Department in your college.  
Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)  
Paper Details (Paper code, Name of the Paper)  
Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
  - c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
  - d) Find the total attendance and total marks obtained by each student.
  - e) List the name of student who has got the highest marks in paper2.
  
3. Create the following tables and answer the queries given below:  
Customer (CustID, email, Name, Phone, ReferrerID)  
Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)  
BicycleModel(ModelNo, Manufacturer, Style) Service  
(StartDate, BicycleID, EndDate)
  - a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
  - b) List all the customers who have the bicycles manufactured by manufacturer “Honda”.
  - c) List the bicycles purchased by the customers who have been referred by Customer “C1”.
  - d) List the manufacturer of red colored bicycles.
  - e) List the models of the bicycles given for service.
  
4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person\_Name, Street, City)

Works (Person\_Name, Company\_Name, Salary)

Company (Company\_Name, City)

Manages (Person\_Name, Manager\_Name)

- a) Identify primary and foreign keys.
  - b) Alter table employee, add a column “email” of type varchar(20).
  - c) Find the name of all managers who work for both Samba Bank and NCB Bank.
  - d) Find the names, street address and cities of residence and salary of all employees who work for “Samba Bank” and earn more than \$10,000.
  - e) Find the names of all employees who live in the same city as the company for which they work.
  - f) Find the highest salary, lowest salary and average salary paid by each company.
  - g) Find the sum of salary and number of employees in each company.
  - h) Find the name of the company that pays highest salary.
5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
  - b) Get supplier numbers for suppliers in Paris with status>20.
  - c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
  - d) Get suppliers names for suppliers who do not supply part P2.
  - e) For each shipment get full shipment details, including total shipment weights.
  - f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
  - g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
  - h) Get the names of cities that store more than five red parts.
  - i) Get full details of parts supplied by a supplier in Hyderabad.
  - j) Get part numbers for part supplied by a supplier in Warangal to a project in Chennai.
  - k) Get the total number of project supplied by a supplier (say, S1).
  - l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).
6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**Multi Media Systems (Semester – IV)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1= 5 Credits**

**UNIT - I**

**Multimedia:** Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia.

**Text:** Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

**Images:** Before You Start to Create, Making Still Images, Color.

**UNIT - II**

**Sound:** The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats, Adding Sound to Your Multimedia Project.

**Animation:** The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

**Video:** Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

**UNIT - III**

**Making Multimedia:** The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems

**Designing and producing:** designing the structure, designing the user interface, a multimedia design case history, producing.

**UNIT - IV**

**The Internet and Multimedia:** Internet History, Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web.

**Delivering:** Testing, Preparing for Delivery, Delivering on CD-ROM, DVD and World Wide Web, Wrapping.

**Text Book:**

1. Tay Vaughan, “Multimedia: Making it work”, TMH, Eighth edition.

**References:**

1. Ralf Steinmetz and KlaraNaharstedt, “Multimedia: Computing, Communications Applications”, Pearson.
2. Keyes, “Multimedia Handbook”, TMH.
3. K. Andleigh and K. Thakkar, “Multimedia System Design”, PHI.
4. Spoken Tutorial on “GIMP” as E-resource for Learning:-<http://spoken-tutorial.org>
5. Spoken Tutorial on “Blender” as E-resource for Learning:-<http://spoken-tutorial.org>

**Example programs:**

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, Pen, oval, circle, rectangle, square, pencil,brush, lasso tool
2. Create an animation using text tool to set the font,size,color etc.
3. Create an animation using Free transform tool that should use followings-
  - Move Objects
  - Skew Objects
  - Stretch Objects
  - Rotate Objects
  - Stretch Objects while maintaining proportion
  - Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
  - Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.)Using the following tools
  - Eraser tool
  - Hand tool
  - Ink bottle tool
  - Zoom tool
  - Paint Bucket tool
  - Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**Programming in Java (Semester – V)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1= 5 Credits**

**UNIT - I**

**Introduction:** Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Structure of Java Program, Type Casting, Conditional Statements, Loops, Classes, Objects, Class Declaration, Creating Objects.

**UNIT - II**

Method Declaration and Invocation, Method Overloading, Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. Class Variables & Method-static Keyword, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

**Inheritance:** Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Packages: Creating and Using Packages, Access Protection, Wrapper Classes, String Class, StringBuffer Class.

**UNIT - III**

**Exception:** Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Multithreading: Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

**Input/Output:** Introduction, java.io Package, File Streams, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

**UNIT - IV**

**Applets:** Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output (Graphics Class).

Event Handling: Introduction, Types of Events, Example.

**AWT:** Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts.

**Swings:** Introduction, Differences between Swing and AWT, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, JTable.

**Text Book:**

1. Sachin Malhotra, SaurabhChoudhary, Programming in Java (2e)

**References:**

1. Bruce Eckel, Thinking in Java (4e)
2. Herbert Schildt, Java: The Complete Reference (9e)
3. Y. Daniel Liang, Introduction to Java Programming (10e)
4. Paul Deitel, Harvey Deitel, Java: How To Program (10e)
5. Cay S. Horstmann, Core Java Volume I –Fundamentals (10e)



**Programming in Java – Lab**

**Practical: 3 Hrs/Wk (1 Credit)**

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write a menu driven program for following:
  - a. Display a Fibonacci series
  - b. Compute Factorial of a number
4. Write a program to check whether a given number is odd or even.
5. Write a program to check whether a given string is palindrome or not.
6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
10. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
11. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
12. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
13. Write a java program to draw a line between two coordinates in a window.
14. Write a java program to display the following graphics in an applet window.
  - a. Rectangles
  - b. Circles
  - c. Ellipses
  - d. Arcs
  - e. Polygons
15. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
16. Write a program for the following string operations:
  - a. Compare two strings
  - b. concatenate two strings
  - c. Compute length of a string

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**Web Technologies (Semester – VI)**

**Theory: 4 Hrs/Wk (4 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 4+1= 5 Credits**

**UNIT – I**

**Introduction To XHTML:** Introduction, first HTML, Headings, Linking, Images, special characters and horizontal rules, Lists, Tables, Frames, Forms, internal linking, meta Elements. Cascading Style Sheets – Introduction, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking external sheets, position Elements, box model and text flow, media types, building a CSS drop-down menu, user style sheets, CSS3.

**UNIT – II**

**Introduction To Java Scripting:** Introduction, simple program, prompt dialog and alert boxes, memory concepts, operators(arithmetic, relational, assignment, increment and decrement, logical), decision making, control structures, if... else statement, while, counter-controlled repetitions, switch statement, do... while statement, break and continue statements.

**UNIT – III**

**Functions:** Program modules in JavaScript, programmer–defined functions, functions definition, scope rules, global functions, Recursion. Arrays- introduction, declaring and allocating arrays, references and reference parameters, passing arrays to functions. Multidimensional arrays, Events – registering event handling, event onload, onmouseover, onmouseout, onfocus, onblur, onsubmit, onreset, event bubbling, more events.

**UNIT – IV**

**Java Script Objects:** Introduction to object technology, Math Object, String Object, Date Object, Boolean and Number Object, document and window Objects, using cookies. XML - Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

**Text Book:**

1. Internet & World Wide Web: HOW TO PROGRAM- H. M. Deitel, P.J. Deitel, -Fourth Edition- Pearson edition.

**Web Technologies – Lab**

**Practical: 3 Hrs/Wk (1 Credit)**

1. Write a HTML program using basic text formatting tags, <p>, <br>, <pre>.
2. Write a HTML program by using text formatting tags.
3. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
4. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
5. Write a HTML program using different list types.
6. Create a HTML page that displays ingredients and instructions to prepare a recipe.
7. Write a HTML program using grouping elements <div> and <span>.
8. Write a HTML Menu page for Example cafe site.
9. Write a HTML program using images, audios, videos.
10. Write a HTML program to create your time table.
11. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
12. Write a HTML program to create frames and links between frames.
13. Write a HTML program to create different types of style sheets.
14. Write a HTML program to create CSS on links, lists, tables and generated content.
15. Write a HTML program to create your college web site using multi column layouts.
16. Write a HTML program to create your college web site using for mobile device.
17. Write a HTML program to create login form and verify username and password.
18. Write a JavaScript program to calculate area of rectangle using function.
19. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
20. Write a JavaScript program using switch case?
21. Write a JavaScript program to print multiplication table of given number using loop.
22. Write a JavaScript programs using any 5 events.
23. Write a JavaScript program using JavaScript built in objects.
24. Write a JavaScript program to create registration Form with Validations.
25. Write a XML Program to represent Student Data using DTD.
26. Write a XML Program to represent Data using XML Schema Definition.

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**Fundamental of Computers (Semester – I)**

**Theory: 2 Hrs/Wk**

**AECC**

**Total Credits: 2 Credits**

**UNIT-I**

**Introduction to Computers:** what is a computer, characteristics of Computers, Generations of Computers, Classifications of Computers, Basic Computer organization, Applications of Computers. Input and Output Devices: Input devices, Output devices, Softcopy devices, Hard copy devices. Computer Memory and Processors: Introduction, Memory Hierarchy, Processor, Registers, Cache memory, primary memory, secondary storage devices, magnetic tapes, floppy disks, hard disks, optical drives, USB flash drivers, Memory cards, Mass storage devices, Basic processors architecture.

**UNIT-II**

**Number System and Computer Codes:** Binary number system, working with binary numbers, octal number system, hexadecimal number system, working with fractions, signed number representation in binary form, BCD code, other codes. Boolean algebra and logic gates: Boolean algebra, Venn diagrams, representation of Boolean functions, logic gates, logic diagrams and Boolean expressions using karnaugh map. Computer Software: Introduction to computer software, classification of computer software, system software, application software, firmware, middleware, acquiring computer software, design and implementation of correct, efficient and maintainable programs.

**Text Book:**

Reema Thareja, Fundamentals of Computers.

**References:**

1. V.Rajaraman, 6<sup>th</sup> Edition Fundamentals of Computers, Neeharika Adabala.
2. Anita Goel, Computer Fundamentals.

**Office Automation (Semester – II)**

**Theory: 2 Hrs/Wk**

**AECC**

**Total Credits: 2 Credits**

**UNIT-I**

**MS-Office:** Introduction to MS-Office, MS-Word: Word Basics, working with formatted text, Shortcut keys, Formatting documents: Selecting text, Copying & moving data, Formatting characters, changing cases, Paragraph formatting, Indents, Drop Caps, Using format painter, Page formatting, Header & footer, Bullets & numbering, Tabs, Forming tables. Finding & replacing text, go to (F5) command, proofing text (Spell check, Auto correct), Reversing actions, Macros, Inserting pictures, Hyperlinks, Mail merging, Printing documents.

**UNIT-II**

**Spreadsheets,** workbooks, creating, saving & editing a workbook, Renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace, Adding and deleting rows and columns Filling series, fill with drag, data sort, Formatting worksheet, Functions and its parts, Some useful Functions in excel (SUM, AVERAGE, COUNT, MAX, MIN, IF), Cell referencing (Relative, Absolute, Mixed), What-if analysis Introduction to charts: types of charts, creation of charts, printing a chart, printing worksheet.

**Presentation** Software, Uses, Presentation tips, components of slide, templates and wizards, using template, choosing an auto layout, using outlines, adding subheadings, editing text, formatting text, using master slide, adding slides, changing color scheme, changing background and shading, adding header and footer, adding clip arts and auto shapes. Various presentation, Working in slide sorter view (deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, viewing slide show, Printing slides.

**Text Book:**

1. Computer Fundamentals – P.K. Sinha.
2. Introduction to Computers – N. Subramanian.
3. Introduction to Computers – Peter Norton Mcgraw Hill.
4. Fundamentals of Computers, by RemaTharaja, Oxford University Press India, 2014.
5. MS–Office \_ BPB Publications.

**Theory: 2 Hrs/Wk**

**SEC – I**

**Total Credits: 2 Credits**

**UNIT – I**

**Introduction to Python Programming:** Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output.

**UNIT – II**

Decision Structures and Boolean Logic: if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables. Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

**Text Book:**

Tony Gaddis, Starting Out With Python (3e)

**References:**

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

**Theory: 2 Hrs/Wk**

**SEC - II**

**Total Credits: 2 Credits**

**UNIT – I**

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab. The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos.

Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

**UNIT – II**

Elementary mathematical functions mathematical functions on scalars, complex numbers, trigonometric functions.

Matrices – introduction, arithmetic operators for matrices, basic matrix processing. Polynomials – introduction, creating polynomials, basic polynomial commands.

**Text Book:**

1. Er. Hema Ramachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB

**References:**

1. Digite, Introduction to ScilabDigite, Optimization in ScilabScilab Enterprises, Scilab for Very Beginners Digite, Introduction to Discrete Probabilities with Scilab

**Theory: 2 Hrs/Wk**

**SEC - III**

**Total Credits: 2 Credits**

**UNIT – I**

Functions: Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, Local Variables, Passing Arguments to Functions, Global Variables and Global Constants, Value-Returning Functions

**UNIT - II**

Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules. Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms. Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.

**Text Book:**

Tony Gaddis, Starting Out With Python (3e)

**References:**

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3.



**Theory: 2 Hrs/Wk**

**SEC - IV**

**Total Credits: 2 Credits**

**UNIT – I**

Programming in scilab – introduction, variables & variable names, assignment statements, arithmetic, relational, logical operators, input & output, flow control/branching/conditional statements, break and continue, handling matrices with loops.

Menus and Dialog Boxes – introduction, a simple menu example, scilab window with greetings menu added, executing submenus from command line, linking menus to scilab code from external files, entering data through dialog boxes

**UNIT – II**

Graphic Output – introduction, 2d plotting, function versions for graphic commands, 3d plotting, other graphic primitives.

String Handling Functions – symbolic processing in scilab, creation of a linear combination of arguments, string to ASCII conversion, creation of a string of blank characters, conversion of a string to uppercase and lowercase, string matching, string concatenation, reversing a string, replacement of a string by another, length of a string, type checking.

**Text Book:**

1. Er. Hema Ramachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB
2. Sci lab a Beginners Apporach by Anil kumar Varma

**References:**

1. Digite, Introduction to ScilabDigite, Optimization in ScilabScilab Enterprises, Scilab for Very Beginners Digite, Introduction to Discrete Probabilities with Scilab

**Theory: 4 Hrs/Wk**

**General Elective**

**Total Credits: 4 Credits**

### **UNIT – I**

**Computer Networks:** Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.

**The Internet:** Internet Services, Types of Internet Connections, Internet Security.

**Introduction to Emerging Computer Technologies:** Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On-demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

### **UNIT – II**

**Email:** Functions of Email, Browser, Web Browser, Internet Service Providers.

**Introduction to Information Security:** Need for Information Security, Threats to Information Systems, Information Assurance, Cyber Security.

**Introduction to Application Security and Counter Measures:** Introduction to Application Security, Data Security Considerations, Security Technologies, Security Threats, Security Threats to E-Commerce, E-Cash and Electronic Payment System.

### **UNIT – III**

**Introduction to Security Measures:** Secure Information System Development Application Development Security Information Security Governance and Risk Management , Security Architecture and Design Security Issues in Hardware, Data Storage, and Downloadable Devices , Physical Security of IT Assets Backup Security Measures

### **UNIT – IV**

**Introduction to Security Policies and Cyber Laws:** Need for an Information Security Policy, Information Security Standards – ISO, Introducing Various Security Policies and Their Review Process , Introduction to Indian Cyber Law Objective and Scope of the IT Act, 2000, Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright Law Related to Semiconductor Layout and Design , Software Licence

### **Text Books:**

Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, Introduction to Information Security and Cyber Laws (Dreamtech Publication)

*B.A/B.Sc.(Computer Applications) Syllabus –CBCS- Pattern System W.E.F – 2019 - 2020*  
**Information Security and Cyber Laws (Semester – VI) – (PROJECT / OPTINAL)**

**Theory: 4 Hrs/Wk (3 Credits)**

**Practical: 3 Hrs/Wk (1 Credit)**

**Total Credits: 3+1= 4 Credits**

**UNIT – I**

**Introduction to Information System and Security:** Computer Networks, Internet, Protocol, Network Core, Information System, Types of IS, Information Security, Need for Information Security, Information Assurance, Cyber security, Tools of the attacker, Scanning and spoofing, password cracking, malicious software, session hijacking.

**UNIT – II**

**Introduction to Cryptography and Applications:** Introduction to Application Security, Data Security Considerations, Security Technologies, Important terms, Threat, Flaw, vulnerability, Attack, Cipher, Private Key Cryptography, Substitution Cipher (Caesar), Transposition (Rail-Fence), Security Threats to E-Commerce, E-Cash and Electronic Payment System, Credit/Debit/Smart Cards, forensics, Digital Signature

**UNIT – III**

**Introduction to Security Measures, Secure Information System Development Application Development Security Information Security Governance and Risk Management , Security Architecture and Design Security Issues in Hardware, Data Storage, and Downloadable Devices , Physical Security of IT Assets Backup Security Measures**

**UNIT – IV**

**Introduction to Security Policies and Cyber Laws:** Need for an Information Security Policy, Information Security Standards – ISO, Introducing Various Security Policies and Their Review Process, Introduction to Indian Cyber law, Objective and Scope of the IT Act, 2008 , Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright, Software License

**Text Book:**

1. Introduction to Information Security and Cyber laws by SuryaPrakashTripathi
2. Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, Introduction to information security and cyber laws (Dreamtech Publication)
3. S. Anderson, Ross, Security Engineering
4. G.R.F. Snyder, T. Pardoe, Network Security
5. Mark Stamp, Information Security: Principles and Practice
6. Basta, W.Halton, Computer Security: Concepts, Issues and Implementation
7. Mark S. Merkow, Jim Breithaupt, Information Security: Principles and Practice

**Information Security and Cyber Laws – Lab**

**Practical: 3 Hrs/Wk (1 Credit)**

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools: John the Ripper, Ophcrack.
3. Verify the strength of passwords using these tools.
4. Perform encryption and decryption of Caesar cipher. Write a script for performing these operations.
5. Perform encryption and decryption of a Rail fence cipher. Write a script for performing these operations.
6. Demonstrate sending of a protected word document.
7. Demonstrate sending of a digitally signed document.
8. Demonstrate sending of a protected worksheet.

**Note:**

- In the external lab examination student has to execute the project with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

**B.A/B.Sc. (Computer Applications)  
Model Question Paper (4 – Credits)**

**3 Hours**

**Max Marks -80**

**PART -A**

**Answer any EIGHT questions in part –A  
Marks**

**8 x 4 M = 32**

**UNIT- I**

- 1
- 2
- 3

**UNIT- II**

- 4
- 5
- 6

**UNIT- III**

- 7
- 8
- 9

**UNIT- IV**

- 10
- 11
- 12

**PART – B**

**Answer All Questions**

**12 x 4 = 48 Marks**

**UNIT- I**

- 13
- OR**
- 14

**UNIT- II**

- 15
- OR**
- 16

**UNIT- III**

- 17
- OR**
- 18

**UNIT- IV**

- 19
- OR**

**B.A/B.Sc. (Computer Applications)  
Practical Question Paper (1 – Credit)**

**3 Hours**

**Max Marks: 25**

**Answer any TWO questions (15 Marks)**

UNIT – I                      1 Program

UNIT – II                     1 Program

UNIT – III                    1 Program

UNIT – IV                    1 Program

Viva – 5 Marks

Record – 5 Marks

B.A./B.Sc. ( Computer Applications )

Practical Question Paper

3 Hours

50

Credits -I

Max Marks -

Answer any Two

15MX2 = 30 MARKS

UNIT – I                      1 Program

UNIT- II                      1 Program

UNIT-III                      1 Program

UNIT -IV                      1 Program

Viva -     10 Marks

Record – 10 Marks