



AURORA'S P.G. COLLEGE, MOOSARAMBAGH

(Affiliated to Osmania University)

MCA I YEAR I SEMESTER HANDBOOK 2018(SESSION PLAN)

CONTENTS :

1. PROGRAM OUTCOME

2. PC 101 IT DISCRETE MATHEMATICS

3. BS 101 MT PROBABILITY & STATISTICS

4. PC 102 IT COMPUTER PROGRAMMING AND PROBLEM SOLVING

5. PC 103 IT ELEMENTS OF INFORMATION TECHNOLOGY

6. HS 101CM ECONOMIC ANALYSIS

7. MC 106 EG ENGLISH

8. PC151 IT C PRGROGMMING LAB-1

9. PC 152 IT IT WORKSHOP

MCA Program Outcomes

The programme aims at preparing professionals for the Computer Application industry and focuses on both theoretical and practical application of computer technology in enabling the students to be knowledgeable in programming, analytical ability, networking, computational techniques, multimedia communication methods, simulation, modeling etc.

1. **Professional thinking.** The students will become successful professionals by demonstrating logical and analytical thinking abilities.
2. **Team work** The students will work and communicate effectively in interdisciplinary environment, either independently or in team, and demonstrate leadership in academia and industry.
3. **Practical approach.** The students will engage in lifelong learning and professional development through discussion, professional studies and research.
4. **Enriched knowledge** Use and apply advanced technical concepts and practices in the core computer applications.
5. **Professional integrity.** Identify computer application related problems, analyze them and design the system or provide the solution for the problem considering legal, ethical and societal issues.
6. **Practical analytical skills.** Recognize the need for and an ability to engage in continuing professional development.
7. **Communication and leadership skills.** Work and communicate effectively in interdisciplinary environment, either independently or in team, and demonstrate scientific leadership in academia and industry.



STUDENT HANDBOOK 2018-2019

MASTER OF COMPUTER APPLICATIONS

I Year I Semester

AURORA'S PG COLLEGE

Moosarambagh, HYDERABAD - 500013

WELCOME NOTE

My Dear Student

The College has a clearly defined goal of evolving into one of the best institutes for Post Graduate education. To reach the envisaged goal, the college provides not only highly committed and qualified faculty but also infrastructure facilities for curricular, co-curricular and extra-curricular activities. The central concern of this institution is to strive for pedagogical and scholastic excellence ably provided by the faculty. Dynamism, experience and erudition characterize the teaching community at Aurora. Highly qualified with MBA, MCA, M.Phil and Ph.D. degrees, the faculty bring their expertise and application oriented attitude to the classroom.

One of the innovative features of Aurora is its novel teaching-learning process that synthesizes conventional mechanisms of learning such as lectures and laboratory sessions, with interactive sessions like Seminars, Guest Lectures, Case Studies Industry-Institute Interaction, Mini Projects and Assignments that enrich and make learning a pleasure. This handbook, a unique feature of this college, helps you as a ready reckoned giving day to day and hour- to - hour lecture schedules, detailed institute interaction and assignment dates to prepare you well in advance. In addition, it also helps in creating a base for you to prepare for competitive examinations like IES, GATE, GRE etc with its exhaustive material.

The College has produced 22 MBA batches and 20 MCA batches of students till now. Majority of the students have been placed in reputed Multinational Companies and many got admitted into renowned National and International Institutes of higher learning. Now it is time for you to emulate your exemplary seniors and to reach higher echelons of the society.

The college has been successful in getting very reputed organizations for placements and I am happy that preparations are made to see that all the students of this college would have their future clearly defined and secure.

From the Institute's side, we assure you that we leave no stone unturned to achieve the above goals. You too, as a student, have a crucial role to play in this arduous but exciting enterprise of making Aurora synonymous with learning and professionalism.

I invite you all to join us in our journey towards excellence.

with all best wishes

Principal

MASTER OF COMPUTER APPLICATIONS

1) COURSE OBJECTIVE

The MCA degree offered by the OU is a three-years programme which aims to equip students with the basic knowledge of all areas of IT. The main objective of the course is to impart basic understanding of concepts, strategies, tools and techniques of information technology, to provide a strong foundation in all technical aspects of computers and their applications, to develop communication and soft skills necessary for IT professionals, and to give hands-on experience in IT applications in industry through projects on computer application software.

2)DISTINCT FEATURES OF THIS COURSE

MCA is a professional course which aims at imparting comprehensive knowledge with equal emphasis on theory and practice. The course curriculum will have enough flexibility to enable a student to undertake advanced studies in computer science. Students are expected to work on a mini project in the V semester and major project in VI semester using either java or .Net Technologies.

3)GRADUATE DESTINATIONS

The MCA program prepares students to take up positions as systems analysts, systems designers, programmers and managers in any field related to information technology. Some of the companies which recruit MCAs regularly are Infosys, TCS, Wipro, Aplabs, Value Labs, Choice Solutions, Accenture, Sankya Infotech etc.

4)DEPARTMENT OF COMPUTER SCIENCE

The Department of Computer Applications was established in the year 1995 with an intake of 45 students. Progressively the intake of the Department increased to 300 students which itself is an indicator of the exemplary escalation of the department. Till now 17 Batches of students have completed their post-graduation successfully and were positioned in National and International corporates of repute.

The department is committed to transmission and promotion of knowledge through scholarly enquiry, innovative teaching methodology and all round personality development of the students. It is outfitted with well experienced and highly qualified teaching faculty, excellent campus placements, well stocked library and well equipped computer lab with wifi facility.

5) FACULTY VIRTUES

The Department is having 4 Associate Professors and 3 Assistant Professors with a perfect blend of experience and enthusiasm. All the faculty members upgrade themselves with zeal and perseverance to keep pace with the latest developments of the IT world by participating in National and International seminars, conferences and workshops and Faculty Development Programs. Our faculty published 20 papers in International Journals and 10 papers in National Journals. They also have presented 8 papers at National Conferences.

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6) DRESS CODE

Students must observe the following dress code:

Gents: Prescribed Dress Code - Formal Shirt of Light Cream Color, Jet Black Trousers & Tie.

Black, full Shoes, Belt and ID-Card.

Ladies: Formal Shirt of Light Cream Color, Jet Black Trousers, Full/Half Black Shoes /full Shoes and ID-Cards.

Please note that jeans and T-shirts do not form part of the dress code. Those who are improperly dressed, and have a shabby appearance will not be allowed into the college premises.

6) ID CARDS

Students will be issued ID cards only after they fill up their details in a prescribed form that will be issued to them at the time of registration. Students are expected to come with their blood group details for this purpose. In case the card is lost, a duplicate ID card will be issued against a payment of Rs 100. Without the ID card, students will not be allowed into the college campus.

7) ATTENDANCE

The continuous evaluation system adopted by the OU and the college clearly expects every student to be responsible for regularity to class, internal tests and other tasks assigned to him/her in the course. As such, students are advised not to absent themselves without the prior submission of leave letter to the respective counselors.

1. A student has to put in a minimum of 75% attendance in aggregate of all the subjects in the year/ semester
2. Condonation of shortage of attendance in aggregate upto 10% (between 65% to 75%) in a semester/ year may be recommended by the College Academic Committee to the OU with supporting evidence in genuine and valid cases.
3. A student will not be promoted to the next semester unless he/she satisfies the attendance requirement of the present semester/year.
4. Shortage of attendance below 65% in aggregate shall in no case be condoned.
5. Students whose shortage of attendance is not condoned are not eligible to take their examination of that class and their registration shall stand cancelled. They may seek re-admission for that semester year when offered next.
6. A stipulated fee shall be payable towards condonation of shortage of attendance.
7. Students coming out in the middle of a class or entering late into a class will be seriously viewed and attendance will not be given for that hour.
8. The monthly attendance of each student, along with the unit test marks, will be displayed on the notice board in the first week of every month. Also a copy of that will be sent to the parents at the address registered with the college. Postage costs will be borne by the student.
9. Students will not be given lab attendance unless they submit practical records of the previous lab sessions.
10. In case of ill-health, a student has to submit a proof of evidence for absence and the leave application to the Principal/Head of the department, immediately on rejoining the college. Late submission of leave application will not be accepted for consideration at the time of condonation of shortfall of attendance.

8) RAGGING

Ragging is a cognizable and punishable offence. Any student found indulging in ragging will be dealt with severely as per the existing orders. It is to be noted that ragging in professional colleges has been banned within or outside the college by the Government of AP, vide Act 26 1997. An extract of the Anti ragging act is given below. Ragging includes words either spoken or written, signs, sounds, gestures and visible representation meant to harass and torture. Ragging is an act which causes or is likely to cause insult/annoyance or fear/apprehension/threat intimidation/outrage of modesty/injury to a student. The full text of Act 26 is placed in the college library

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11) LAB CODE

1. Students should report to the scheduled labs as per the time Table.
2. Students who turn up late to the labs will in no case be permitted to perform the experiment scheduled for the day.
3. After completion of the experiment, certification of the staff in-charge in the observation book is necessary.
4. Students should bring a notebook of about 100 pages and should enter the readings/observations into the notebook while performing the experiment.
5. Not more than two students in a group are permitted to perform the experiment on a setup.
6. The group-wise division made in the beginning should be adhered to, and no mix up of student among different groups will be permitted later.
7. Any damage to the equipment or burn-out of components will be viewed seriously and the entire group of students is liable for penalty or the dismissal of the enter group of students from the lab for the rest of the semester/year.
8. Students should be present in the labs for the total scheduled duration.

9. Requisition of Systems for extra practice should be done 24 hrs. prior to the practice

12) PUNCTUALITY

1. All students shall strictly observe the college timings. If any student comes late to college, he/she will not be allowed to the class and attendance will not be marked for that hour.
2. If anyone is found to be regularly late, administrative action shall be initiated, including suspension from classes.
3. All the students should strictly adhere to the deadlines specified for the submission of assignments, laboratory reports, seminar and project reports, failing which students will incur academic punishment(s).

SCHEME OF INSTRUCTION
MCA (MASTER OF COMPUTER APPLICATIONS)
Proposed from the Academic year 2016-2017 [CBCS]

MCA I Year

SEMESTER – I

S. No	Course Code	Course Title	Scheme of Examination		L	T	P/Dr	Hrs/Wk	Credits
			CIE	SEE					
1.	PC 101 IT	Discrete Mathematics	30	70	3	1	-	4	3
2.	BS 101 MT	Probability & Statistics	30	70	3	1	-	4	3
3.	PC 102 IT	Computer Programming and Problem Solving	30	70	4	0	-	4	4
4.	PC 103 IT	Elements of Information Technology	30	70	3	1	-	4	3
5.	HS 101 CM	Economic Analysis	30	70	3	1	-	4	3
6.	MC 106 EG	English	30	70	3	1	-	4	3
PRACTICALS									
6.	PC 151 IT	Programming Lab I (C Programming Lab)	25	50	-	-	4	4	2
7.	PC 152 IT	Programming Lab II (IT Workshop)	25	50	-	-	4	4	2
Total			230	520	16	4	8	32	23

With effect from the academic year 2016 - 2017

PC 101 IT

DISCRETE MATHEMATICS

Instruction	4 Periods per week
Duration	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT- I

Mathematical Logic - Statements and notation connectives, Equivalence of statement formula, Theorem proving – Introduction to predicate calculus.

Relations – Binary relations and digraphs, special properties of Binary relations, Equivalence relations, Ordered relations, Lattices and Enumerations, Operations of relations.

UNIT -II

Functions – Definitions and properties of functions, Inductively defined functions, partial functions, Hashing functions, Recursion.

Boolean Algebra – Definition and properties, Lattices, Boolean functions, Normal forms. Disjunctive Normal Forms (DNF). Conjunctive Normal Forms (CNF). Principal DNF, Principal CNF, Applications to switching networks, applications to logic.

UNIT –III

Recurrence Relations – First-order linear recurrence relation, Second-order linear homogeneous recurrence relations with constant coefficients, Non-homogeneous recurrence relations

Algebraic structures – Definition, Examples and Properties

Groups: Definition, Examples and elementary properties, Homomorphism, Isomorphism and Cyclic groups.

UNIT - IV

Elementary combinatory – sets, operations on sets, Venn diagram, basics of counting combinations and permutations without repetitions, unlimited repetitions, constrained repetitions. Binomial coefficients, Binomial and Multinomial theorems, principle of inclusion and exclusion.

UNIT -V

Graph Theory: Basic concepts, Isomorphism and sub graphs, trees and their properties, spanning trees, directed trees, binary trees.

Planar graphs, Euler's formula, multigraphs and Euler Circuits.

Hamiltonian graphs, chromatic numbers, four color problem, network flows.

Suggested Reading:

1. Jr. P. Tremblay and R Manohar “Discrete Mathematical Structures with Applications to Computer Science”, McGraw Hill, 1987.
2. Jol L. Moth, Abraham Kondel, Theoddar P. Paker “Discrete Mathematics for Computer Scientists and Mathematicians” PH 1976.
3. Ralph P. Grimaldi “Discrete and Combinatorial Mathematics” 5th Edition, Pearson, 2004.

With effect from the academic year 2016 - 2017

BS 101 MT

PROBILITY AND STATISTICS

Instruction	4 Periods per week
Duration	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

Data Validation and Information Abstraction: Methods of collecting data efficiently, Gathering information from data charting.

UNIT-II

Probability: Laws of Probability, Probability distributions, Discrete, Equiprobable, binomial, Poisson.

UNIT-III

Continuous Distributions: Rectangular, normal, gamma and beta.

UNIT-IV

Statistical Methods : Frequency distributions, Mathematical Expectation, Moments, Skewness and Kurtosis.

UNIT-V

Correlation and Regression, Introduction to tests of Significance, u, t, x tests.

Suggested reading:

1. S.C. Gupta and V.K. Kapoor, “ Fundamentals of Mathematical Statistics” , 1989.
2. William Mendenhall, Robert J. Beaver, Barbara M.. Beaver, “ Introduction to Probability and Statistics”, Thomson Brooks / Cole, Eleventh Edition, 2003.\
3. Richard A. Johnson, “Probability and Statistics for Engineers”, Prentice Hall of India, Seventh Edition, 2005.

With effect from the academic year 2016 - 2017

PC 102 IT COMPUTER PROGRAMMING AND PROBLEM SOLVING

Instruction	4 Periods per week
Duration	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT – I

Introduction to Computer Programming: Computing Environments, Computer Languages, Creating and Running Programs, Number Systems (Binary, Octal, Decimal, Hex), Representation of numbers (fixed and floating point)

Algorithms and Flow charts : Definition of Algorithms, examples, Symbols used in Flow chart, examples.

Introduction to C Language - Background, C Identifiers, Data Types, Operators, Variables, Constants, Input / Output, Expressions, C Programs, Precedence and Associativity, Evaluating Expressions, Type Conversion, Statements, Bitwise Operators.

UNIT-II

Selection: Logical Data and Operators, if-else, switch Statements, Standard Functions.

Repetition: loops, while, for, do-while statements, Loop examples, break, continue, go to.

Arrays - Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two- Dimensional Arrays, Multidimensional Arrays, Linear and Binary Search, Selection, Bubble, Insertion Sorts.

UNIT – III

Functions: Designing Structured Programs, Functions Basics, User Defined Functions, Inter Function Communication, Standard Functions, Scope, Storage Classes-auto, Register, Static, Extern, Scope Rules, and Type Qualifiers.

Recursion- Recursive Functions, Terminating Condition, Quick & Merge Sort Techniques, Preprocessor Commands.

UNIT - IV

Pointers - Introduction, Pointers to Pointers, Compatibility, L value and R value, Arrays and Pointers, Pointer Arithmetic and Arrays

Call-by-reference: Pointers for Inter-Function Communication, Passing Arrays to a Function,

Dynamic Memory Allocation: Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command-line Arguments.

Strings - Concepts, C Strings, String Input / Output Functions, Arrays of Strings, String Manipulation Functions.

With effect from the academic year 2016 - 2017

UNIT - V

The Type Definition (type def), Enumerated Types

Structure: Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Self Referential Structures. Unions.

Input and Output: Files, Streams, Standard library Input Output Functions, Character Input Output Functions.

Suggested Reading:

1. Rajaraman V, "The Fundamentals of Computer", 4th Edition, Prentice Hall of India, 2006
2. Kernighan BW and Ritchie DM, "The C Programming Language", 2nd Edition, Prentice Hall of India, 2006.
3. J.R. Hanly and E.B. Koffman, "Problem Solving and Program Design in C", Pearson Education, 2007.
4. B. A. Forouzan and R.F. Gilberg, "C Programming & Data Structures", Cengage Learning, 2007.

With effect from the academic year 2016 - 2017

PC 103 IT

ELEMENTS OF INFORMATION TECHNOLOGY

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

Introduction to Information Technology: Information concepts & Processing: Basic concepts of IT, data Processing, data and information

Elements of computer system: Classification, history and types of computers.

Hardware: CPU, Memory unit, I/O devices, auxiliary storage devices, data representation

Software: System and Application s/w and utility packages.

Programming Languages: classification, Machine code, Assembly Language, higher level languages, fourth generation languages. Translators: Assembler, Compiler and Interpreter.

UNIT –II

Operating systems: Concept as resource manager and coordinator of processor, devices and memory. Concept of priorities, protection and parallelism. Command interpreter, Typical commands of Linux/MS Windows

Communications: Client server systems, Computer networks, network protocols, LAN, WAN, Internet facilities through WWW, Mosaic, Gopher, html, scripting languages, communication channels, factors affecting communication among devices.

UNIT-III

Files & Databases: Data Storage hierarchy, File management systems, database management systems, types of data base organizations, features of database management systems.

Information integrity & computer security: Perverse software, concepts and components of security, Preventive measures and treatment.

UNIT-IV

Information System analysis & design: system study review, problem definition, system analysis, system design.

Management Information systems: information need of managers, developing a management information system, planning & decision making practices supported by an MIS.

With effect from the academic year 2016 - 2017

UNIT-V

Computers impact on society & Range of applications: scientific, educational, industrial, business, multilingual applications.

Suggested Reading:

1. Sanders, D.H. "Computers Today" McGraw Hill. 1988.
2. Prof. Vikram Singh, "Impact of Information & Communication Technology on public life" (1st Edition) Lakshmi Publications, 2009
3. Trainer T., et , "Computers" (4th Edition) McGraw Hill, 1994

With effect from the academic year 2016 - 2017

HS 101 CM

ECONOMIC ANALYSIS

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

The nature and scope of Managerial Economics, Fundamental concepts of managerial economics.

UNIT-II

Demand Analysis, concepts of demand, demand elasticity's.

UNIT -III

Production and cost analysis and principles: Production function, single output isoquantum, average cost curve – Laws of returns – Laws of supply, Price determination under different competitive situations.

UNIT-IV

National income : Concepts, measurement and determinants.

Planning : The machinery for planning in India, Salient features of India's Five, Year plans.

UNIT-V

Indian Financial Systems, Functions and role of Reserve Bank of India. Conventional Banks and Industrial Finance. Term "lending Financial Institutions-role and functions.

Suggested Reading:

1. Dhiraj Bhattacharya & Pranab Chakraborti, "Fundamentals of Business Economics", A.H. Wheeler & Co. (P) Ltd., 1986.
2. Barry Keating & J. Holton Wilson, "Managerial Economics". Biztantra, Second Edition, 2003.
3. Dominick Salvatore, "Managerial Economics", Thomson, Fourth Edition, 2001.

MC 106 EG

ENGLISH

Instruction	: 4 Hours/week
Duration of University Examination	: 3 Hours
University Examination	: 70 Marks
Sessional	: 30 Marks

The following are the objectives of the course:

To enable the students to

- communicate clearly, accurately and appropriately
- know and use verbal and non-verbal communication appropriately
- infer information from texts
- learn basic grammar of the English language
- use appropriate idiomatic expressions, one word substitutes etc.

UNIT – I

Effective communication: Role and importance of communication; Features of human communication; Process of communication; Importance of listening, speaking, reading, and writing, Types of listening, Tips for effective listening, Types of communication: Non-verbal communication, Verbal – Formal versus informal communication, One-way versus two-way communication; Barriers to communication

UNIT – II

Remedial English : Common errors, Tense and aspects, Connectives and correlative conjuncts, Simple, complex and compound sentences, Voice, concord, Direct and indirect speech, Degrees of comparison, Question tags, Punctuation

UNIT - III

Written Communication : Paragraph writing, Précis writing, Expansion, Essay writing, Personal Letters, General reports

UNIT – IV

Vocabulary: Technical vocabulary, Homonyms, Homophones, Synonyms, Antonyms, Words often confused, One-word substitutes, Idiomatic usage, Affixes

UNIT – V

Reading comprehension and reading strategies.

The following five lessons are prescribed:

1. Dr. A.P.J. Abdul Kalam
2. Sathya Nadella
3. Azim Premji
4. Sachin Tendulkar
5. Sam Pitroda

Textbook prescribed:

E. Suresh Kumar, *Engineering English*, Orient Blackswan, 2014.

Books Recommended:

- 1.E. Suresh Kumar et al., *Communication Skills and Soft Skills*, Pearson, 2011.
2. Sanjay Kumar and Pushp Lata, *Communication Skills*, OUP, 2011.
- 3.Kavita Tyagi and Padma Misra, *Professional Communication*, PHI, 2011.
- 4.Meenakshi Raman and Sangeeta Sharma, *Technical Communication: Principles and Practice*, OUP, 2011.

With effect from the academic year 2016 - 2017

PC 151 IT

**PROGRAMMING LAB - I
(C PROGRAMMING LAB)**

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	50 Marks
Sessional	25 Marks

1. Finding the maximum and minimum of given set of numbers
2. Finding Roots of a Quadratic Equation
3. Sin x and Cos x values using series expansion
4. Conversion of Binary to Decimal, Octal, Hex-Decimal and vice versa
5. Generating a Pascal triangle
6. Program using Recursion - Factorial, Fibonacci, GCD, Quick Sort and Merge Sort
7. Matrix addition and multiplication using arrays
8. Programs for Bubble Sort, Selection Sort, Insertion Sort
9. Programs on Linear Search and Binary Search
10. Functions for string manipulations
11. Finding the No. of characters, words and lines from a given text file
12. Program to open a file and copy the contents of it into another file.

With effect from the academic year 2016 - 2017

PROGRAMMING LAB - II (IT Workshop)

PC 152 IT

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	50 Marks
Sessional	25 Marks

Syllabus:

1. System Assembling , Disassembling and identification of Parts / Peripherals
2. Operating System Installation – Install Operating Systems like Windows, Linux along with necessary Device Drivers.
3. MS-Office / Open Office
 - a. Word – Formatting Page Borders, Reviewing Equations, symbols
 - b. Spread Sheet – organize data, usage of formula graphs charts
 - c. Power point – features of power point, guidelines for preparing an effective presentation
 - d. Access – creation of database, validate data
4. Network Configuration & Software Installation : Configuring TCP/IP, proxy and firewall settings. Installing application software system software & tools.
5. Internet and World Wide Web-Search Engines. Types of search engines, netiquette, Cyber hygiene.
6. Trouble Shooting – Hardware trouble shooting, Software trouble shooting.
7. MATLAB – basic commands, subroutines, graph plotting
8. LATEX – basic formatting, handling equations and images.

Suggested Reading:

1. K. L. James, Computer Hardware, Installation, Interfacing Troubleshooting and Maintenance, Eastern Economy Edition.
2. Gary B.Shelly, Misty E Vermaat and Thomas J. Cashman, Microsoft Office 2007 Introduction Concepts and Techniques, Windows XP Edition, 2007, Paperback.
3. Leslie Lam port, LATEX-User's Guide and Reference manual, Pearson, LPE, 2nd Edition.
4. Rudraprathap, Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers, Oxford University Press, 2002.
5. Scott Mueller's, Upgrading and Repairing PCs, 18th Edition, Scott. Mueller, QUE, Pearson, 2008.
6. Cherry l A Schmidt, The Complete Computer Upgrade and Repair Book, 3rd Edition , Dream tech.
7. Vikas Gupta, Comdex Information Technology Course Tool Kit , WILEY Dream tech.
8. ITL Education Solutions Limited, Introduction to Information Technology, Pearson Education.

SCHEME OF INSTRUCTION
MCA (MASTER OF COMPUTER APPLICATIONS)
Proposed from the Academic year 2016-2017 [CBCS]

MCA I Year

SEMESTER - II

S. No	Course Code	Course Title	Scheme of Examination		L	T	P	Hrs/ Wk	Credits
			CIE	SEE					
1.	HS 201 CM	Accounting & Financial Management	30	70	3	1	-	4	3
2.	PC 201 IT	Principles of Object Oriented Programming using Java	30	70	4	-	-	4	4
3.	PC 202 IT	Management Information Systems	30	70	3	1	-	4	3
4.	PC 203 IT	C++ and Data Structures	30	70	3	1	-	4	3
5.	PC 204 IT	Computer Organization	30	70	3	1	-	4	3
6.	HS 202 EG	Communication Skills	30	70	3	1	-	4	3
PRACTICALS									
6.	PC 251 IT	Programming Lab – III (OOP Lab)	25	50	-	-	4	4	2
7.	PC 252 IT	Programming Lab – IV (C++ Programming Lab)	25	50	-	-	4	4	2
Total			230	520	16	4	8	32	23

With effect from the academic year 2016 - 2017

HS 201 CM ACCOUNTING AND FINANCIAL MANAGEMENT

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

An overview of Accounting cycle – Basic concepts and conventions – Books of Account – Terminal statement.

UNIT-II

Financial statement analysis and interpretation – Ration analysis.

UNIT-III

Working capital – Sources and uses – Funds flow and cash flow analysis – Management of Inventory.

UNIT-IV

Capital Budgeting – Techniques for evaluation – Cost of capital – Computation of specific costs, and weighted average cost of capital.

UNIT-V

Analysis of costs and their behavior – Cost volume – Profit analysis Variable costing and absorption costing.

Budgets-Flexible Budgeting – Long and Short term forecasting.

Suggested Reading:

1. James. C. Van Horne, “Fundamentals of Financial Management”, Pearson Edition, Eleventh Edition, 2001.
2. Khan MY, Lain PK, “Financial Management”, Tata McGraw Hill, Second Edition, 1993.
3. Maheswari SN, “Management Accounting and Financial Control”, Sultan Chand & Co.
4. Gupta G. Radhaswamy M, “Advanced Accountancy”, Sultan Chand, & Sons.

With effect from the academic year 2016 - 2017

PC 201 IT PRINCIPLES OF OBJECT ORIENTED PROGRAMMING USING JAVA

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Oriented Concepts, Benefits of Object Oriented Development.

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Classes, Methods, Inheritance, Packages and Interfaces.

UNIT-II

Exception Handling, Multithreaded Programming, I/O basics, Reading console input and output , Reading and Writing Files, Print Writer Class, String Handling.

UNIT-III

Exploring Java Language, Collection Overview, Collections Interfaces, Collection Classes, Iterators, Random Access Interface, Maps, Comparators, Arrays, Legacy classes and Interfaces, String Tokenizer, Bit Set, Date, Calendar observable, Timer.

UNIT-IV

Java I/O classes and Interfaces, Files, Stream and Byte Classes, Character Streams, Serialization.

UNIT-V

GUI [and Event Driven Programming : Applet Class, Event Handling, Delegation event model, event classes, event listener Interfaces. Customizing Frame Windows, GUI Programming Basics, Text Related GUI Components, Layout Managers, Effective use of Nested panels, Other GUI components, Menus and Handling Mouse Events.

Suggested Reading:

1. Patrick Naughton “JAVA 2, The Complete Reference” Tata McGraw Hill, 2005.
2. Richard A. Johnson, “Java Programming and Object-Oriented Applications Development” Cengage Learning, India edition, 2009.
3. John Dean and Raymond Dean “ Introduction to Programming with JAVA A Problem Solving Approach”, McGraw Hill, 2008.
4. Joe Wigglesworth and Paula McMillan, “ Java Programming : Advanced Topics” Cengage Learning, 3rd Edition, 2009.

With effect from the academic year 2016 - 2017

PC 202 IT MANAGEMENT INFORMATION SYSTEMS

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

An Introduction to concepts of System and Organizations. Strategic uses of Information Technology, Business Process in Engineering and Information Technology.

UNIT-II

Applications of Operational Information Systems to Business, Tactical and Strategic Information System to Business.

UNIT-III

Information Systems Planning, approach to System Building Alternative Application Development.

UNIT-IV

Managing Knowledge, Knowledge Management in the Organization, Enhancing Management Decision-Making, DSS, GDSS, and ESS.

UNIT-V

Management of Information Systems, Information System security and control, Ethical issue, managing firm infrastructure and Enterprise system.

Suggested Reading:

1. Robert Schultheis, Mary Summer, “ Management Information Systems – The Manager’s view”, Tata McGraw Hill, Fourth Edition, 2006.
2. Kenneth C. Loudon, Jane P Loudon, “Management Information System”, Prentice Hall, 2008.
3. Ralph Stair, George Reynolds “Principles of Information Systems”, Cengage Learning 2008.
4. James A, O’Brien, “Management Information Systems”, Tata McGraw Hill, Sixth Edition, 2004.

With effect from the academic year 2016 - 2017

PC 203 IT

C++ AND DATA STRUCTURES

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Introduction to C++: Programming paradigms, Object Oriented Programming Concepts, Advantages and Applications of OOPs.

Functions: Call by value, call by reference, Inline Functions, Function Overloading, Recursion,

Arrays: Introduction to Arrays, Arrays in functions, Programming with Arrays and multidimensional Arrays

UNIT - II

Defining classes: Classes, Abstract data types. Friend Functions and Member Functions. Constructors, Destructors, Strings, Pointers and Dynamic Arrays.

UNIT – III

Operator overloading.

Inheritance: The notation of inheritance, derived classes, overriding, Virtual Base Class. Virtual functions, Polymorphism, Exception Handling, Function Templates, Class Templates.

UNIT-IV

Introduction to Linear Data Structures: Linear Lists, Stacks, Queues using Array Representation and Linked Representation, Applications of Stacks and Queues, Hashing, Collision Resolution.

UNIT – V

Non-Linear Data Structures: Binary Trees, properties, Representation, and Traversals, AVL Trees, Operations on AVL Trees, B-Trees.

Graphs: Definition, Representation, Traversals.

Suggested Reading:

1. Walter Savitch, Problem Solving with C++, 6th Edition, Pears Education Publishing, 2009.
2. Bjarne Stroustrup, The C++ Programming Language, 3rd Edition, Pearson Education.
3. Sartaj A Sahani, Data Structures and Algorithms, Tata McGraw Hill, 2013,

With effect from the academic year 2016 - 2017

PC 204 IT

COMPUTER ORGANIZATION

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	70 Marks
Sessional	30 Marks

UNIT-I

Digital Logic Circuits: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Flip Flops, Sequential Circuits.

Digital Components: Integrated Circuits, Decoder, Multiplexers, „Registers, Shift Registers, Binary counter, Memory unit.

Data Representation: Data types, Complements, Fixed and Floating Point Representation, Other binary codes and error Detection codes.

UNIT-II

Register Transfer and Micro operations: Register Transfer language, Register transfer, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations and Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycles, Memory Reference Instructions, Input, Output and Interrupts, Design of Accumulator logic.

UNIT-III

Programming the Basic Computer: Introduction, Machine Language, Assembly Language, The Assembler, Programming Arithmetic and Logic Operations, Subroutines, and input-output, Programming.

Micro programmed Control: Control Memory, Address Sequencing, Micro program Example, Design of Control Unit.

UNIT-IV

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, RISC.

Parallel Processing: Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline.

Computer Arithmetic: Addition and Subtraction, Multiplication algorithms, Division Algorithms, Floating point arithmetic operations, decimal arithmetic unit, and decimal arithmetic operations.

UNIT-V

Input – Output Organization : Peripheral Devices, I/O output interface, Asynchronous data transfer, Modes of transfer, Priority Interrupt, DMA, Input output Processor, Serial Communication.

Memory Organization: Memory Hierarchy, Main Memory, Cache Memory.

With effect from the academic year 2016 - 2017

Suggested Reading:

1. M. Morris Mano, "Computer System Architecture", Pearson Education Asia, Third Edition, 1993.
2. Mile Murdocca, Vincent Heuring, "Computer Architecture and Organization", John Wiley & Sons, 2007.
3. Sivarama P Dandamudi "Fundamentals of Computer Organization and Design", Wiley Dream Tech Publishers, 2003.
4. William Stallings, "Computer Organization & Architecture", Pearson Education, Sixth : Edition, 2003.
5. G.V.Anjaneyulu, "Computer Organization", Himalaya Publishing House.

HS 202 EG

Communication Skills

Instruction	: 4 Hours /Week
Duration of University Examination	: 3 Hours
CIE	: 30 Marks
SEE	: 70Marks

The following are the objectives of the courses, to enable the students to

Communicate clearly, accurately and appropriately

Learn different models of interpersonal communication

Work in teams effectively and learn how to be effective in using time

Comprehend the difference between technical and general writing

Write reports, scientific papers, letters, Statement of Purpose, Resume

Learn how to plan and prepare to face interviews effectively

UNIT – I

Business Communication: Importance of business communication; ABC of technical communication – Accuracy, Brevity, Clarity; Channels of communication: Downward communication, Upward communication, Diagonal communication, Horizontal communication; Organisational GDs

UNIT – II

Interpersonal Communication and Personality Development: Models of interpersonal development, Johari window, Knapp's model, styles of communication; Team work; Persuasion techniques; Mobile Etiquette, e-mail Etiquette; Time Management

UNIT – III

Technical Written Communication: Differences between Technical Writing and General Writing; Report Writing: Types of Reports, Structure/Format, Language Style, Writing Technical Reports; Writing Scientific Papers

UNIT – IV

Career Oriented Written Communication: Writing SOPs; Job Application: Language style and Format; Résumé writing: design and style; Cover Letter; Business Letters: Letters of enquiry and responses, Letters of complaint, Letters of adjustment, Sales letters; Agenda and minutes of the meeting

UNIT – V

Interview Skills and Group Discussions: Interviews: Purpose, Planning, Preparation, Language and style, Sample interview questions and answers; Group discussions: Types of GDs, Features of good GDs, Preparing for a group discussion

Textbook prescribed:

1. E. Suresh Kumar, *Engineering English*, Orient Blackswan, 2014.

Books Recommended:

1. E. Suresh Kumar et al., *Communication Skills and Soft Skills*. Pearson, 2011.
2. E. Suresh Kumar et al., *English for Success*. Cambridge University Press India Private Ltd, 2010.
3. Sanjay Kumar and Pushp Lata. *Communication Skills*. OUP, 2011.
4. Kavita Tyagi and Padma Misra. *Professional Communication*. PHI, 2011.
5. Meenakshi Raman and Sangeeta Sharma. *Technical Communication: Principles and Practice*. OUP, 2011.

Programming Lab-III

PC 251 IT

(OOP LAB)

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	50 Marks
Sessional	25 Marks

1. A program to illustrate the concept of class with constructors, methods and overloading.
2. A program to illustrate the concept of inheritance and dynamic polymorphism.
3. A program to illustrate the usage of abstract class.
4. A program to illustrate multithreading.
5. A program to illustrate thread synchronization.
6. A program to illustrate Exception handling.
7. A program to illustrate user-defined Exceptions
8. A program to demonstrate use of User-defined Packages.
9. A program using String Tokenize.
10. A program using Linked list class
11. A program using Tree Set class
12. A program using Hash Set and Iterator classes
13. A program using Map classes.
14. A program using Enumeration and Comparator interfaces.
15. A program using File and Filename Filter
16. A program to illustrate the usage of Byte and Character I/O streams.
17. A program to illustrate the usage of Serialization.
18. Program using Data class.
19. An application involving GUI with different controls, menus and event handling.
20. A program to implement an applet.

Programming Lab-IV

PC 252 IT

(C++ PROGRAMMING LAB)

Instruction	4 periods per week
Duration of university Examination	3 hours
University Examination	50 Marks
Sessional	25 Marks

1. Call-by-Value and Call-by-Reference example programs
2. Program on Function Overloading
3. Program on Inline Functions and Default Arguments
4. Program to check Identity Matrix, Upper Triangular and Lower Triangular Matrices
5. Program to find A U B using Dynamic Memory Allocation
6. Implementation of Rational Numbers using classes
7. Program on Complex Numbers Class.
8. Implementation of Matrix Class.
9. Programs on Constructors, Destructors, and Friend Functions
10. Programs on Inheritance, Virtual Functions, Dynamic Polymorphism
11. Programs on Operator Overloading and Templates
12. Implementation of Stacks using Arrays
13. Program on Linear Lists using Arrays
14. Implementation of Queues using Linked Representation
15. Program on Single Linked List Operations
16. Program on Binary Tree Traversal Techniques

SUBJECT: 101 IT: Discrete Mathematics

CONTENTS:

1. SYLLABUS

2. SUGGESTED BOOKS

- **TEXT BOOKS**
- **REFERENCE BOOKS**

3. WEBSITES

4. JOURNALS

- **INTERNATIONAL**
- **NATIONAL**

5. SESSION PLAN

OBJECTIVES AND RELEVANCE

Keeping in view the basic computer related concepts and provide a coherent development and common theme for these ideas, the syllabus has been so designed. Students begin to see the relevance of abstract ideas and are therefore better motivated.

SCOPE

The syllabus is designed in such a way that it supports the more advanced courses in computer science programs such as in the areas of automata, computability, artificial intelligence, switching theory computer representation of discrete structures.

PREREQUISITES

Competence at degree level, in the following topics is expected:

- i. Introduction to logic
- ii. Elementary set theory
- iii. Functions
- iv. Counting techniques
- v. Group theory

SYLLABUS-O.U

UNIT I

OBJECTIVE

Logic is the discipline that deals with the methods of reasoning. Logical reasoning is used in computer science to verify the correctness of programs and to prove theorems. Inter relationship of set theory, and logic is being discussed. In order for students to be able to read technical articles and books in computer science, it is necessary for them to know something about predicate calculus.

SYLLABUS

Mathematical Logic-Statements and notation connectives, Equivalence of statement formula, Theorem proving-Introduction to predicate calculus.

Relations- Binary relations and digraphs, special properties of Binary relations, Equivalence relations, ordered relations, Lattices and Enumerations, Operations of relations.

UNIT II

OBJECTIVE

The concept of partially ordered sets, including lattices and Boolean algebra are useful in the construction of logical representations for computer circuits, It also discusses about the concept of emigroup and monoid theory which is very important in certain areas of computer science such as formal language theory, syntactic analysis and automata. Coding theory has developed techniques for introducing redundant information in transmitted data that help in detecting and sometimes correcting errors.

SYLLABUS

Functions-Definitions and properties of functions, inductively defined functions, partial functions, Hashing functions, Recursion.

Boolean Algebra-Definition and properties, Lattices, Boolean functions, Normal Forms, Disjunctive Normal Form (DNF), Conjunctive Normal Form(CNF),Principal DNF,Principal CNF,Applications to switching networks, Applications to logic.

UNIT-III

OBJECTIVE

Techniques for counting are important in mathematics and in computer science, especially in the analysis of algorithms. In addition, recurrence relations are another tool for the analysis of computer programs.

SYLLABUS

Recurrence Relations-First-order linear recurrence relation, Second-order linear homogenous recurrence relations with constant coefficients, non-homogenous recurrence relations

Algebraic structures-Definition, Examples and Properties

Groups: Definition, Examples and elementary properties, Homomorphism, Isomorphism and Cyclic groups.

UNIT-IV

OBJECTIVE

In this unit we study a special type of relation that is exceptionally useful in a variety of computer applications and is usually represented by its digraph. These relations are essential for the construction of database and language compilers.

SYLLABUS

Elementary combinatorics – sets, operations on sets, Venn diagram, basics of counting combinations and permutations without repetitions, unlimited repetitions, constrained repetitions.

Binomial coefficients, Binomial and Multinomial theorems, principle of inclusion and exclusion.

UNIT-V

OBJECTIVE

Graph theory begins with very simple geometric ideas and has many powerful applications. Here an alternate definition of graph that includes the more general multigraph and is more appropriate for the applications are developed.

SYLLABUS

Graph Theory: Basic concepts, Isomorphism and sub graphs, trees and their properties, spanning trees, directed trees, binary trees.

Planar graphs, Euler's formula, multigraphs and Euler Circuits.

Hamiltonian graphs, chromatic numbers, four color problem, network flows.

Suggested Reading:

1. Jr. P. Tremblay and R Manohar "Discrete Mathematical Structures with Applications to Computer Science", McGraw Hill, 1987.
2. Jol L. Moth, Abraham Kondel, Theoddar P. Paker "Discrete Mathematics for Computer Scientists and Mathematicians" PH 1976.
3. Ralph P. Grimaldi "Discrete and Combinatorial Mathematics" 5th Edition, Pearson, 2004.

T1 about Authors:

Jr. P. Tremblay

Tremblay was born in Aurora Colorado and raised in Massachusetts. He attended Providence College in Providence, receiving his Bachelor's Degree in 1993. He obtained his Master's degree in Mathematics from the University of Vermont in 1995.

In summers between college, Tremblay worked at the Parker Brothers factory in Salem, Massachusetts, primarily in the warehouse and assembly lines. After graduation, he began teaching high school mathematics and coaching junior varsity basketball at a private school outside Boston, Massachusetts.^[1]

In 2015, Focus Features optioned his novel *A Head Full of Ghosts*. It is in development with Team Downey (Robert Downey Jr and Susan Downey) and Allegiance Theater (Dan Dubiecki) as producers.^[2]

T2 RR Manohar

Amasamy Subramania Manohar was born on 29 June 1925 at [Namakkal](#) as Lakshmi Narashiman to Subramania Iyer and Rajalakshmi Ammal.^[1] He got the name Manohar after playing the lead role in the play **Manohara** during school days. He graduated from Pachaiyappa's College, Chennai.

According to film historian Randor Guy, he got a breakthrough in films with *Rajambal* (1951) when, as a graduate, he was employed in the Postal Department. Producer R. M. Krishnaswamy booked him for the lead role in this film. As his name was not "filmi", it was changed to R. S. Manohar.^[3]

While in college, Manohar used to perform stage plays. After graduation, he joined films. His first effort was *Rajamabal*, produced by Aruna Films. His early memorable roles were in films such as *Vannakkili*, *Kaidhi Kannayiram*, *Vallavanukku Vallavan*, *Vallavan Oruvanand Iru Vallavargal*.

T3 John Parker

John Parker was born on February 2, 1827 in Norfolk, Virginia. His mother was a slave, but his father was a free white man. When Parker was eight years old, his owner sold him to a doctor who resided in Mobile, Alabama. In Mobile, Parker's new owner taught him to read and write. Many states had laws prohibiting the education of slaves. Many slave owners believed that education would encourage slaves to run away as they became more knowledgeable about the world around them. An educated slave also removed a primary justification by slave owners for slavery -- that African Americans supposedly were incapable of becoming educated. Nevertheless, Parker's owner allowed his slave to become educated. His owner even allowed Parker to become an apprentice at a local iron foundry. Parker later was owned by one of the doctor's patients, When he was eighteen years old, he purchased his freedom with money that he earned while working at the foundry.

Parker eventually moved to the North. He briefly worked in Indiana and in Cincinnati, Ohio, at several iron foundries. In 1848, Parker established a general store at Beachwood Factory, Ohio. In 1850, Parker settled in Ripley, Ohio, along the Ohio River. Here, he opened his own foundry. He also became active in the Underground Railroad. Parker commonly traveled across the Ohio River and helped fugitive slaves from Kentucky escape to the North. Parker routinely took the fugitives to John Rankin, another abolitionist who resided in Ripley. Rankin hid the fugitive slaves and assisted them in their journey. During the American Civil War, Parker served as a recruiter for the 27th Regiment, U.S. Colored Troops.

WEBSITES:

1. www.elservier.com
2. www.maths.mq.edu.au
3. www.archives.math.utk.edu
4. www.depaul.edu
5. www.mathforum.org
6. www.mhne.com
7. www.siam.org
8. www.akcejournal.org

JOURNALS:

INTERNATIONAL

1. SIAM Journals DM.
2. Journal of international Journal of Graph and combinations.
3. AKCE International Journal of Graphs and Combinations.
4. Discrete Mathematics
5. Discrete Mathematics Applications
6. Journal of Discrete Mathematical Sciences cryptography
7. Journal of Graph theory

NATIONAL

1. Journal of Mathematical and Physical Sciences.
2. Journal of Discrete Mathematical Sciences cryptography
3. Nordic Journal of Computing.CSI Communication.
4. Bulletin of Calcutta Mathematical Society
5. India National Science Academy
6. Indian Journals of Pure and Applied Mathematics

**Information and Research Institute Of Aurora
Moosarambaugh, Hyderabad
DISCRETE MATHEMATICS-Session Plan**

UNIT-I

Sl. No.	Unit	Syllabus	Modules	Sub Modules	Lecture No.	Suggested Books
1	Unit-I	Mathematical Logic	Statements and notation connectives	Equivalence of statement formula	L1	T1,T2
				Theorem proving	L2	T1,T2
				Introduction to predicate calculus	L3	T1,T2
			Relations	Binary relations and digraphs	L4	T1,T2
				Special properties of Binary relations	L5	T1,T2
				Equivalence relations	L6,L7	T1,T2
				ordered relations	L8	T1,T2
				Lattices and Enumerations	L9	T1,T2
				Operations of relations.	L10	T1,T2

UNIT-II

2	Unit-II	Functions	Definitions and properties of functions	inductively defined functions	L13,L14	T1,T2
				partial functions	L15,L16	T1,T2
				Hashing functions	L17,L18	T1,T2
				Recursion.	L19	T1,T2
			Boolean Algebra	Definition and properties	L20	T1,T2

				Lattices	L21	T1,T2
				Boolean functions	L22	T2
			Normal Forms	Disjunctive Normal Form(DNF)	L24	T2
				Conjunctive Normal Form(CNF)	L25	T2
				Principal DNF	L26	T2
				Principal CNF	L27	T1,T2
				Applications to switching networks	L28	T1,T2
				Applications to logic	L29	T1,T2

UNIT-III

3	Unit-III	Recurrence Relations	Recurrence Relations	First-order linear recurrence relation	L30,L31	T1,T3
				Second-order linear homogenous recurrence relations with constant coefficients	L32,L33	T1,T3
				Second-order linear homogenous recurrence relations	L34,L35	T1,T3
				non-homogenous recurrence relations	L36,L37	T1,T3
			Algebraic structures	Definition	L38,L39	T1,T3
				Examples and Properties	L40	T1,T2
			Groups	Definition	L41	T1,T3
				Examples and elementary properties	L42	T1,T3
				Homomorphism,	L43,L44	T1,T3
				Isomorphism	L45	T1,T3
				Cyclic groups.	L46,L47	T1,T3

UNIT-IV

4	Unit-IV	Elementary combinatory	Elementary combinatory	Sets	L48	T1,T3
				operations on sets	L49	T1,T3
				Venn diagram	L50	T1,T3
				of counting combinations and permutations without repetitions	L51,L52	T1,T3
				unlimited repetitions	L53,L54	T1,T3
					L55	T1,T3
				constrained repetitions	L56	T1,T3

				Binomial coefficients	L57	T1,T3
				Binomial and Multinomial theorems	L58	T,T3
				principle of inclusion and exclusion	L59	T1,T3

UNIT-V

5	Unit-V	Graph Theory	Basic concepts	Isomorphism and sub graphs	L60	T1,T5,T7
				trees and their properties	L61	T1,T3
				spanning trees	L62	T1,T3
				directed trees	L63	T1,T3
				binary trees	L64	T1,T3
			Planar graphs	Euler's formula	L65	T1,T3
				Multigraphs	L66	T1,T3
				Euler Circuits	L67	T1,T3
			Hamiltonian graphs	chromatic numbers	L68	T1,T3
				four color problem	L69	T1,T3
				network flows	L70	T1,T3

Master Of Computer Applications (MCA)

Syllabus

Paper Code –MCA BS101MT

PROBILITY AND STATISTICS

CONTENTS:

1. SYLLABUS

2. SUGGESTED BOOKS

- TEXT BOOKS
- REFERENCE BOOKS

3. WEBSITES

4. JOURNALS

- INTERNATIONAL
- NATIONAL

5. SESSION PLAN

Objective and Relevance

Probability theory is the branch of mathematics that deals with modeling uncertainty. It is important because of its direct application in areas such as genetics, finance and telecommunications. It also forms the fundamental basis for many other areas in the mathematical sciences including statistics, modern optimization methods and risk modeling. Demonstrate understanding of the properties of probability and probability distributions and their role as the foundation for statistical inference Demonstrate ability to use formal mathematical argument in the context of probability and statistics.

UNIT-I OBJECTIVE:

Students will use appropriate statistical terms to describe data. use appropriate statistical methods to collect, organize, display, and analyze relevant data and apply graphical methods of displaying data. • Construct frequency distributions, histograms, frequency polygons, pareto charts, ogives, pie charts, and box-and-whisker plots. • Read and analyze frequency distributions, histograms, frequency polygons, pie charts, and box-and-whisker plots.

SYLLABUS

Data Validation and Information Abstraction: Methods of collecting data efficiently, Gathering information from data charting.

UNIT-II OBJECTIVE

Students will compute fluently and make reasonable estimations. • Calculate the measures of central tendency. For a sample or population of data., For grouped data Apply the rules of probability (addition, conditional, multiplication).

SYLLABUS

Probability: Laws of Probability, Probability distributions, Discrete, Equiprobable, binomial, Poisson.

UNIT-III OBJECTIVE

Students will apply concepts of the normal distribution, Rectangular Distribution to find probability

SYLLABUS

Continuous Distributions: Rectangular, normal, gamma and beta.

UNIT-IV OBJECTIVE

Students will apply concepts of different statistical methods.

SYLLABUS

Statistical Methods : Frequency distributions, Mathematical Expectation, Moments, Skewness and Kurtosis.

UNIT-V OBJECTIVE

Students will make estimations for a mean, variance, standard deviation and proportions. •

SYLLABUS

Correlation and Regression, Introduction to tests of Significance, u, t, x tests.

Suggested reading:

1. S.C. Gupta and V.K. Kapoor, “ Fundamentals of Mathematical Statistics” , 1989.
2. William Mendenhall, Robert J. Beaver, Barbara M.. Beaver, “ Introduction to Probability and Statistics”, Thomson Brooks / Cole, Eleventh Edition, 2003.\
3. Richard A. Johnson, “Probability and Statistics for Engineers”, Prentice Hall of India, Seventh Edition, 2005.

Introduction to the Authors:

T1) S.C.Gupta and V.K.Kapoor

S.C.Guptha is a reader in statistics, Hindu college, University of Delhi , New delhi and V.K.Kapoor is a reader in mathematics, Shri Ram college of Commerce, University of Delhi, New Delhi

T2 William Mendenhall, Robert J. Beaver, Barbara M.. Beaver

Dr. William Mendenhall was the first chairman of the Statistics department at the University of Florida, from 1963 until 1977. He received his Ph.D. in Statistics at North Carolina State University, and was professor in the Mathematics Dept. at Bucknell University in Pennsylvania before taking the position at Florida. He published articles in some of the top statistics journals, such as *Biometrika* and *Technometrics*. His text *Introduction to Probability and Statistics* was a landmark text for introductory service courses that has found extensive use around the world for the past 40 years.

Robert J. Beaver is a Emeriti Professor University of California, Riverside

T3) Richard A. Johnson

PhD 1966 Statistics University of Minnesota Founding Editor, *Statistics and Probability Letters* (1982-2007) Fellow, American Statistical Association Fellow, Institute of Mathematical Statistics Research Interests: Life Testing and Reliability, Statistical Inference, Large Sample Theory, Applied Multivariate Analysis

Unit wise syllabus coverage:

T1.: S.C. Gupta and V.K. Kapoor, “ Fundamentals of Mathematical Statistics” , 1989.
:This book covers 100% of Unit :I,Unit-II,Unit-III,Unit-IV,Unit-V.

T2 William Mendenhall, Robert J. Beaver, Barbara M.. Beaver, “ Introduction to Probability and Statistics”, Thomson Brooks / Cole, Eleventh Edition, 2003
This book covers :40% of Unit I, 30% of UnitII, 30% of Unit-IV

T3 Richard A. Johnson, “Probability and Statistics for Engineers”, Prentice Hall of India, Seventh Edition, 2005.
This book covers :50% of UnitI, 50% of Unit II,50% of Unit III,70% of Unit IV

WEBSITES:

1. www.britannica.com/topic/probability
2. www.mathsisfun.com/data/index.htm
3. [www. stattrek.com/](http://www.stattrek.com/)
4. www.e-booksdirectory.com/listing.php?category=15

JOURNALS:

INTERNATIONAL

1. International Journal of Advanced Statistics and Probability
2. International Journal of Statistics and Probability
3. International Journal of Mathematics and Statistics Invention

NATIONAL

1. Advances in Applied Probability
2. Computational Statistics and Data Analysis
3. Communications in Statistics

SESSION PLAN

UNIT-I

Sl. No.	Unit	Syllabus	Modules	Sub Modules	Lecture No.	Suggested Books
1	Unit-I		Data Validation and Information Abstraction	Data validation	L1	T1
				Information abstraction	L2	T1
			: Methods of collecting data efficiently	Methods to collect data	L3	T1,T2
				Problems	L4	T1,T2
			Gathering information from data charting.	Data charting	L5	T1,T2,
				Problems	L6	T1

UNIT-II

2	Unit II	Probability	Laws of Probability,	Probability Laws	L7	T1,T2
				Theorems on probability	L8	T1,T2
			Probability distributions	Probability Distribution	L9	T1,T2
				Problems	L10	T1,T2
				Problems	L11	T1
			Discrete, Equiprobable,	Theorems	L12	T1
				Problems	L13	T1,T2
			Binomial, Poisson.	Binomial Distribution	L14	T1,T2
				Problems	L15	T1,T2
				Poisson Distribution	L16	T1,T2
				Problems	L17	T1,T2

UNIT-III

3	Unit-III	Continuous Distributions:	Continuous Distributions: Rectangular, normal, gamma and beta.	Continuous Distributions	L18	T1,T2
				Theorems	L19	T1,T2
				Problems	L20	T1,T2
				Rectangular. Distribution	L21	T1,T2
				Theorems	L22	T1,T2
				Problems	L23	T1,T2
				Normal Distribution	L24	T1,T2
				Theorems	L25	T1,T2
				Problems	L26	T1,T2
				Gamma Distribution	L27	T1,T2
				Theorems	L28	T1,T2
				Problems	L29	T1,T2

				Beta Distribution	L30	T1,T2
				Theorems	L31	T1,T2
				Problems	L32	T1,T2

UNIT-IV

4	Unit 4	Statistical Methods	Statistical Methods : Frequency distributions, Mathematical Expectation, Moments, Skewness and Kurtosis	Statistical Methods	L33	T5
				Problems	L34	T4
				Problems	L35	T1
				Frequency distributions	L36	T1,T2
				Theorems	L37	T1,T2
				Problems	L38	T1,T2
				Mathematical Expectation	L39	T1,T2
				Theorems	L40	T1,T2
				Problems	L41	T1,T2
				Moments	L42	T1,T2
				Theorems	L43	T1,T2
				Problems	L44	T1,T2
				Skewness	L45	T1,T2
				Theorems	L46	T1,T2
				Problems	L47	T1,T2
				Kurtosis	L48	T1,T2
				Theorems	L49	T1,T2
Problems	L50	T1,T2				

UNIT-V

5	Unit-V	Correlation and Regression, Introduction to tests of Significance, u, t, x tests.	Correlation and Regression, Introduction to tests of Significance, u, t, x tests.	Correlation and Regression	L51	T1,T2
				Problems	L52	T1,T2
				Introduction to tests of Significance	L53	T1,T2
				u, t, x tests.	L54	T1,T2
				Problems	L55	T1,T2

5.3 COMPUTER PROGRAMMING AND PROBLEM SOLVING

- 5.3.1 Objectives and Relevance
- 5.3.2 Scope
- 5.3.3 Prerequisites
- 5.3.4 Syllabus - O.U.
- 5.3.5 Suggested Books
- 5.3.6 Websites
- 5.3.7 Experts' Details
- 5.3.8 Journals
- 5.3.9 Trends and Developments
- 5.3.10 Student Seminar Topics
- 5.3.11 Session Plan
- 5.3.12 Tutorial Plan
- 5.3.13 CPPS Activity Plan
- 5.3.14 Question Bank

5.3.1 OBJECTIVES AND RELEVANCE

The main objective of this subject is to teach students the fundamental concepts in computer programming using C++. It forms a clear way for programming and problem solving. To understand the programming concepts, designing programs by using C & C++.

5.3.2 SCOPE

This is the foundation course for learning any object-oriented programming languages. After completion of this subject students can gain the knowledge in designing programs by themselves. It involves learning programs to apply each of the object-oriented concepts – class, object inheritance, polymorphism Germanic programming.

5.3.3 PREREQUISITES

Students should have knowledge of computer fundamentals, i.e., using computer system. Although no previous knowledge and computer fundamental, algorithms and flow chats, is required students should who have idea about ‘C’ language then he/she will manage very easily.

5.3.4 SYLLABUS - O.U.

UNIT - I OBJECTIVE

It describes about introductory concepts of computer environment and languages along with its syntaxes and semantics. This unit defines Algorithms and flowcharts. This unit explains the basic concepts of C.

SYLLABUS

Introduction to Computer Programming :Computers Systems, Computing Environments, Computer Languages, Creating and Running programs, Number System(Binary, Octal, Decimal and Hex), representation of numbers(fixed and floating point)

Algorithms and Flowcharts: Definition of Algorithms, examples, Symbols used in flwchart examples.

Introduction to C Language: Background, Identifiers, Datatypes, Variables, Constants, Operators, Input/and Output, Expressions, C programs, Precedence & Associativity, evaluating expressions, type conversions, statements, Bitwise Operators

UNIT - II OBJECTIVE

It also contains C token set, conditional statements and control Statements are also explained. This unit describes the data structured programs on arrays,

SYLLABUS

Selection: Logical Data and Operators, if-else, switch statements, standard functions.

Repetition: loops, while, for, do-while statements, Loop examples, break, continue, goto.

Arrays: Concepts, using arrays in C, Inter-Function Communication, Array Applications, Two-Dimensional Arrays, Multidimensional Arrays, Linear and Binary Search, Selection, Bubble, Insertion Sorts.

UNIT - III

OBJECTIVE

This unit explains the basic concepts of functions, user defined functions, storage classes and recursive functions. It also contains a very important concept of sorting techniques.

SYLLABUS

Functions: Designing Structured Programs, Functions Basics, User Defined Functions, Inter Function Communication, Standard Functions, Scope, Storage Classes-auto, register, static, extern, scope rules and Type qualifiers.

UNIT - IV

OBJECTIVE

This unit explains the basic concepts of Pointers. It also contains a very important concept of call-by-reference i.e., passing arrays to a function are also explained. It also explains the basic concepts of strings and its functions.

SYLLABUS

Pointers: Introduction, Pointers to Pointers, compatibility, L value and R value arrays and pointers, Pointer arithmetic and arrays.

Call-by-reference: Pointers for Inter-Function Communication, Passing arrays to a function

Dynamic Memory Allocation: Memory allocation functions, Array of pointers, programming applications, pointers to void, pointers to functions, command-line arguments.

Strings: Concepts, C strings, string Input/output functions, arrays of strings, string manipulation functions.

UNIT - V

OBJECTIVE

This unit describes enumerated, typedef, structure and union types. And it also explains the basic streams and file I/O. File I/O includes stream I/O, tools for I/O and character I/O, which can be used for performing operations through files

SYLLABUS

The Type Definition (type def), Enumerated Types

Structure: Definition and Initialization of structures, Accessing structures, Nested structures, Arrays of structures, Structures and Functions, Pointers to structures, Self referential structures, Unions.

Input and Output: Files, Streams, Standard library input output functions, Character input output functions.

5.3.5. SUGGESTED BOOKS

TEXT BOOKS

- T1. Behrouz a. Forouzan, Richard F Grilberg, "Computer Science - c programming and data structures 3rd Edition, Cengage Learning 2007
- T2 . Rajaraman V, the fundamentals of computer, Fourth edition, prentice hall of india, 2006
- T3. J.R. Ilanly and E.B. Koffman, Problem Solving and Program Design in C, Pearson Education, 2007.
- T4. B.A. Forouzan and R.F. Gilberg, C Programming & Data Structures, Cengage Learning, 2007.

REFERENCE BOOKS

- R1. Let us c by yesvant kantiker
- R2. Mastering C by KR Venugopal.
- R3. Bjarne Stroustrup, "The C Programming Language", 3rd Edition, Addison Wesley 1998.
- R4. C / C++ How to Program by P.J. Dietel, H.M. Dietel

5.3.6 WEBSITES

1. www.cplusplus.com
2. www.cprogramming.com
3. www.cppreference.com
4. www.parashift.com
5. www.cuj.com
6. www.tutorialpoint.com

5.3.7 EXPERTS' DETAILS

INTERNATIONAL

1. Professor, Andrew W. Appel
Dept of Computer Science
Princeton University Email:
appel@princeton.edu Ph: +1-
609-258-4627
2. Mr. Hugh W. MCGuire
School of computing and information systems
Grand Valley State University
Email: mcguire@cis.gvsu.edu
Ph : (616)331-2915
3. Mr. Benjamin John Sapp
Stanford University
Email: bensapp@stanford.edu
Ph: (217)-898-0092

NATIONAL

1. Mr. Harish Karnick,
IIT, Kanpur
Ph: 91-512-259-7601
Email: hk@cse.iitk.ac.in
2. Mr. S. Arun
Kumar IIT, Delhi
Ph: 91-11-2659-1287
Email: sak@cse.iitd.ernet.in
3. Mr. Sanjiva
Prasad IIT, Delhi
Ph: 91-11-2659-1294
Email: sanjiva@cse.iitd.ac.in
4. Mr. N.S. Narayana
Swamy IIT, Madras
Ph: 91-44-2257-4369
Email: swamy@iitm.ac.in

5.3.8 JOURNALS

INTERNATIONAL

1. Programming Languages ACM Trans on
2. Journals On Object - Oriented Programming
3. Journal of C Language Translation

NATIONAL

1. Dobbs journal
2. Journal of Object-Oriented Programming
3. Journal of Programming Languages
4. C++ Journal

5.3.11 SESSION PLAN

S. No	Lecture No.	Topics as per OU syllabus	Module No.	Modules and Sub Modules	Suggested Books	Page No.
UNIT-1						
1	L1	Introduction to Computer Programming	M1	Computer Systems, Computing Environment.	T1 - Ch.1	1-5
	A1	Seminar	M2	Computer Languages : First generation, Second generation, Third generation, Fourth generation	T1- Ch.1	6-8
	L2	Introduction to Computer Programming	M3	Creating & Running Programs	T1 - Ch.1	8-10
	L3		M4	Number Systems, Representation of Numbers	T1 - Ch.2	15-26
	L4	Algorithms and Flowcharts	M5	Definition of Algorithms, Examples	T1 - Ch.1	14-16
	L5		M6	Symbols used in flowchart, Examples	T1 - Ch.1	17-27
	L6	Introduction to C Language	M7	Background, Identifiers, Data Types, Variables, Constants	T1 - Ch.2	38-53
	A2	Group Discussion	M8	Operators, Input/output Expressions	T1 - Ch.3	84-94
	L7	Introduction to C Language	M9	Precedence and associativity, Evaluating expressions	T1 - Ch.3	95-101
	L8		M10	Type conversion, Statements, Bitwise Operators	T1 - Ch.3 T1-Ch.4	102-111 129-136
	A3	Case Study	M11	Random Number Generation	R4-Ch.6.6 T1-Ch.7	207-210 314-316
UNIT II						
2.	L9	Selection	M1	Logical Data and Operators	T1- Ch.5	164-169
	L10		M2	If-else, Switch Statements,	T1 - Ch.5	169-193
	A4	Seminar	M3	Standard Functions: Character functions, File Functions, Input/output functions, String functions	T1 - Ch.5	193-196
	L11	Repetition	M4	Loops, While, for	T1 - Ch.6	220-233
	A5	Group Discussion	M5	Do-while, Loop Examples	T1- Ch.6	234-250
	L12	Repetition	M6	Break, continue, go to	T1 - Ch.6	251-253
	L13	Arrays	M7	Concepts, Using Arrays in C	T1- Ch.8	388-399
	L14		M8	inter-Function Communication	T1- Ch.8	400-406
	L15		M9	2D arrays, Multidimensional arrays	T1 - Ch.8	415-425
	A6	Quiz 1				
	L16	Arrays	M10	Linear and Binary Search	T1-Ch.15	781-788
	L17		M11	Selection, Bubble and Insertion sort	T1-Ch.15	760-764
	A7	Case Study	M12	Game of chance	R4 -Ch.6	212 - 215

S.No.	Lecturer No	Topics as per OU Syllabus	Module No	Modules and Sub Modules	Suggested Books	Page No.
UNIT- III						
3	L18	Functions	M1	Designing Structured Programs	T1- Ch.7	279-280
	L19		M2	Functions in C	T1- Ch.7	281-283
	A8	Seminar	M3	User-defined functions: Void functions without parameters, Void functions with parameters, Non Void functions without parameters, Non Void functions with parameters,	T1- Ch.7	284-300
	L20	Functions	M4	Inter-function communication (parameter passing mechanism)	T1- Ch.7	301-310
	L21		M5	Standard Functions, Scope	T1- Ch.7	310-322
	L22		M6	Storage Classes-auto, register	T1- Ch.7	322-325
	A9	Group Discussion	M7	Static, Extern	T1- Ch.7	326-329
	L23	Functions	M8	Type Qualifiers	T1- Ch.7	329-332
	L24	Recursion	M9	Recursive Functions, Terminating Condition	T1- Ch.7	337-347
	L25		M10	Quick Sort, Merge Sort		
	L26		M11	Preprocessor Commands	T1- Ch.7	347-363
	A10	Case Study	M12	Card Shuffling and dealing simulation	R4-Ch7 www.cboard.cprogramming.com www.cs.berkeley.edu	300 – 302
UNIT-IV						
	L27	Pointers	M1	Introduction to pointers, Pointer-to-Pointer	T1- Ch.9	442-455, 459-461
	L28		M2	Compatibility, L value and R value arrays and Pointers	T1- Ch.9 T1- Ch.10	461-473 487-489
	L29	Pointers, Call-by-reference	M3	Pointer Arithmetic and arrays, Pointers for Inter-Function Communication	T1- Ch.9 T1- Ch.10	456-458 490-497
	L30	Call-by-reference	M4	Passing arrays to a function	T1- Ch.10	497-500
	L30	Seminar	M5	memory allocation functions: Block Memory Allocation(malloc), Contiguous Memory Allocation(calloc), Reallocation of Memory(realloc), Releasing Memory(free)	T1- Ch.10	501-506
	L31	Dynamic Memory Allocation	M6	Array of pointers, Programming Applications	T1- Ch.10	507-512
	L32		M7	Pointers to Void, Pointer to functions	T1- Ch.10	513-518

S.No.	Lecturer No	Topics as per OU Syllabus	Module No	Modules and Sub Modules	Suggested Books	Page No.
	A12	Group Discussion	M8	Command line arguments	T1- Ch.10	518-521
	L33	Strings	M9	String concepts, C Strings Input/output Functions	T1- Ch.11	534-553
	L34		M10	Array of Strings, String Manipulation functions	T1- Ch.11	553-574
	A13	Case Study	M11	Grade book using an array to store grades	R4 –Ch.7 www.cboard.cprogramming.com www.cs.berkeley.edu	287-290
UNIT-V						
	L35	User Defined Data types	M1	The Type-definition (Type def),	T1- Ch.12	600-601
	L36	User Defined Data types	M2	Enumerated Types	T1- Ch.12	601-606
	L37	Structures	M3	Definition and Initialization of structures	T1- Ch.12	606-608
	L38		M4	Accessing Structures	T1- Ch.12	609-616
	A14	Group Discussion	M5	Nested Structures	T1- Ch.12	616-620
	L38	Structures	M6	Array of Structures	T1- Ch.12	620-621
	L39		M7	Structures and Functions, Pointers to structures, Self referential Structures, Unions	T1- Ch.12	622-633
	A15	Seminar	M8	Union to Union, Union to Structures, Structures to Union, Structure to Structure	T1- Ch.12	628-633
	L41	Input/output	M9	Files, Streams	T1- Ch.13	659-662
	A16	Quiz – 2				
	L42	Input/output	M10	Standard Library input/output functions	T1- Ch.13	663-667
	L43		M11	Character input/output functions	T1- Ch.13	692-699
	A17	Case Study	M12	Functions with default argument	R4-Ch.9 www.cboard.cprogramming.com www.cs.berkeley.edu	393-398

5.3.14 QUESTION BANK

UNIT – I

Module -1

1. Briefly discuss about computing environments. (Feb 16)
2. Write notes on system development (Aug 13)
3. Discuss computing environments and system development. (Aug 11)
4. Draw the block diagram of a computer and explain the function of each unit. (May11)

Module -2

1. Differentiate among the following computer languages.
i) Machine language ii) Symbolic language iii) High level language (July/Aug15)
2. Write short notes on computer languages. (Feb14)
3. Differentiate between object oriented programming and procedure oriented programming (Aug 13)
4. Discuss the evaluation of computer languages. (May11)

Module - 5

1. Define algorithm. Write an algorithm to read a number and check whether it is a prime number or not. (Feb 16)

Module -7

1. Write notes on Data types of 'C' language. (Feb 16)
2. What are the basic data types in 'C'? Explain with examples. (July/Aug15)
3. Write a program that contains statements that output the value of six variables that are defined but not initialized. (Feb15)
4. Briefly discuss about identifiers (Feb14)
5. Explain the Identifiers. (July 12/ May 11)
6. Briefly discuss about constants and variables (Feb14)
7. Explain the Constants (May11)

Module -8

1. Write a program to find the roots of a quadratic equation. (Feb 16)
2. Describe about various logical and arithmetic operators in 'C' language. (July/Aug15)
3. Explain all arithmetical operators used in 'C' with the help of simple programs. (Feb15)
4. Explain about different input & output statements in C? (Feb 12)
5. Explain the Operators. (May11)
6. Explain about various 'assignment operators' in C language. (Jan 11)
7. Explain the Expressions (July 12)

Module -9

1. Discuss about operator's of 'C' and precedence of associatively. (Feb 16)
2. Briefly discuss about Precedence and Associativity (Feb14)
3. Explain the Precedence of operators (July 12)
4. Explain the Associativity. (May11)

Module -10

1. Briefly discuss about Type conversions (Feb14)
2. Explain bitwise and logical operators in c (Aug 13)
3. Describe about type casting in C language? (Feb 12)
4. What are various type-cast operators? Explain their usage with suitable example. (Aug 11)
5. Describe about 'Type Casting' in C-language. (Jan 11)

UNIT – II

Module -2

1. Explain about various conditional statements of 'C' language with syntax and example for each. (Feb 16)
2. Write a C program find the biggest of 3 numbers. (Feb 16)
3. Explain different conditional statements in 'C' with suitable examples. (July/Aug15)
4. Explain the control statements used in 'C'. (Feb15)
5. Explain about the various control statement of C-language with syntax and examples for each. (Feb14)
6. Explain about different control statements in 'C' language. (July 12)
7. Explain different conditional statements in C language. (Feb 12)
8. Explain different control statements with examples. (Aug 11)
9. What are the different conditional statements? Explain. (May11)

Module -4

1. Give syntax and examples for various looping statements available in 'C'. (Feb 16)
2. Write a program to print all even number's from 100 to 2 in descending order. (Feb 16)
3. Write a program to print all prime numbers from 2 to 100. (Feb14)
4. Write a c program wheter a number is palindrome or not (Aug 13)
5. Write a C-program to find given string is palindrome or not (Aug 13)
6. Write a c-program to find roots of quadratic equation. (Aug 13)
7. Write a program to add two complex numbers (Aug 13)
8. Write a C program for calculating fibonacci series. (Feb 12)
9. Write a C program to check whether the given number is palindrome or not? (Feb 12)
10. Write a C-program to find whether the given number is prime or not. (Jan 11)

Module - 5

1. Write a 'C' program to print first fifteen Fibonacci series. (Feb15)
2. Write a 'C' program for addition, subtraction, division and multiplication of given numbers using switch statement. (July 12)
3. Write a C program to check for a vowel or a consonant using case statement. (Aug 11)
4. Give the syntax and example for 'switch' statement in C language. (Jan 11)

Module -6

1. Write notes on break and continue statements. (Feb 16)
2. Explain the purpose of using 'break' and continue' statements in C Language. (Jan 11)

Module -7

1. Explain the dynamic arrays (July/Aug15)
2. Write a C++ program that sorts the numbers using arrays. (July/Aug15)
3. Write a program to sum the numbers on the diagonal matrix (Aug 13)
4. What is an array? Write a program to multiply two given numbers (Aug 13)
5. Write a C program for finding multiplication of 2 given arrays? (Feb 12)
6. Write a C program to find a largest number stored in an array of 50 elements. (Aug 11)
7. Write a C program to multiply two given arrays. (May 11)
8. Write a C-program to find the average of elements in an array of size 10. (Jan 11/ July 10)

Module - 8

1. Explain about call-by-value and call-by-reference with suitable examples for each. (Feb 16)

Module - 9

1. Write a program to multiply 2 matrices. (Feb 16)
2. Write a program to check whether a given square matrix is an identity matrix or not. (Feb 16)
3. Write a 'C' program for finding GCD. (July 12)
4. Write a C-program to find factorial of a given number. (Jan 11)

Module - 11

1. Write a program to sort the given numbers using bubble sort. (Feb15)
2. Write a program to implement selection sort. (Feb14)
3. Write a 'C' program to sort the elements using bubble sort. (July 12)
4. Write a C-program to sort the elements in the array using bubble sort . (May 11)
5. Write a C++ program using templates for sorting (Aug 13)

UNIT - III

Module - 3

1. Differentiate between formal parameters and actual parameters with suitable examples. **(Feb 16)**

Module - 4

1. What is a pointer? Swap the two given numbers using pointers. **(Feb15)**
2. Explain the concept of call-by-reference in 'C' with an example. **(Feb15)**
3. Differentiate between call-b-value and call-b-reference in C-language with examples. **(Feb14)**
4. Differentiate between pass by value and pass by reference. **(July 12)**
5. Differentiate between pass by value and pass by reference with suitable example. **(Aug 11)**

Module - 5

1. Differentiate between local and global variables with examples **(Aug 13)**

Module - 6

1. Discuss in detail about storage classes. **(Feb 16)**
2. Explain the following storage classes in 'C' language. **(July 12/ Jan 11)**
(i) Auto (ii) Register (iii) Static (iv) External
3. Explain different storage classes in C with suitable example. **(May 11)**

Module - 9

1. Define recursion and write a program to find GCD of given 2 numbers using recursive function. **(Feb 16)**
2. What is recursion? Write a recursive function to calculate the factorial of a given number. **(Feb15)**
3. Write a C program for finding the factorial of a given number using recursion? **(Feb 12)**
4. What is recursion? Write a recursive program for generating fibonacci series. **(Aug 11)**

Module - 10

1. Write a program to implement binary search technique. **(Feb 16)**
2. Write a program to implement quick sort. **(Feb 16)**

Module -11

1. Explain (i) structure (ii) union (iii) preprocessor directives with examples. **(Feb15)**
2. Explain about the pre-processor directives. **(Feb 16/Feb14)**
3. Explain: (a) Pre-processor directives. **(July 12/ Aug 11)**
4. Write short notes on preprocessor directives. **(Feb 12)**

UNIT - IV

Module - 1

1. Write a short notes on pointers. (Feb 16)
2. Explain pointer to pointers (July/Aug 15, Feb 12)
3. What is a pointer? Swap the two given numbers using pointers. (Feb15)
4. Write about pointers to pointers (Aug 13)
5. Describe about 'Pointer to Pointers'. (Jan 11)

Module - 3

1. Differentiate between call-by-value and call-by-reference with examples. (Feb 16)
2. Write notes on pointer's and pointer arithmetic. (Feb 16)
3. Explain how functions return pointers. (July/Aug15)
4. Write a C-program to Compare two given string using pointers. (May 11)

Module - 4

1. Write a 'c' program to print the elements of the two dimensional array using pointer notation. (July/Aug15)
2. Discuss about Recursion and write a program to find the GCD of 2 numbers using recursion. (Feb14)
3. Write a C-program to print the elements of the two dimensional array using pointer notation. (July 10)

Module - 5

1. What is dynamic memory allocation? Write a program to find $A^U B$ using dynamic memory allocation. (Feb 16)
2. Write about malloc (Aug 13./ Feb 12)
3. Write a 'C' program for passing an array to the function and finding sum of the array elements.(July 12)
4. Explain the f Malloc() function (May 11)

Module - 6

1. Distinguish between array of pointers and pointers to an array with suitable example. (May 11)

Module - 9

1. Write a C-program to find the no of vowels in a given string. (Jan 11)

Module - 10

1. Briefly discuss about string manipulation functions. (Feb 16)
2. Explain Array of strings (July/Aug15)
3. Briefly explain about string manipulation functions. (Feb14)

4. Explain different string functions? (Feb 12)
5. Explain the following: (i). Strcmp() (ii) strcat() (May 11)

UNIT - V

Module - 1

1. Explain typedef (Feb 16/Aug 13/ July 12/ Aug 11)

Module - 2

1. Explain Enumarated Data Types (Feb 16/Jan 11)
2. Explain about various operations on enumerated data types. (July/Aug15)
3. Explain enumerated datatypes (Aug 13/ July 12/ Aug 11)

Module - 3

1. What are structures? Write a program to store 'n' students detail and print their results. (Feb14)
2. Explain about the Structure (May 11)

Module - 4

1. Explain about the Structure with Union (May 11)

Module - 5

1. Explain about Nested structures (Aug 13)
2. Explain about Nested Structures (May 11)

Module - 6

1. Explain about Array of structrues (Aug 13)
2. Explain about Structure containing arrays (Aug 13)
3. How does a structure differ from an array? (Jan 11)

Module - 7

1. Write notes on Self referential structures. (Feb 16)
1. Explain the following : (i) Pointers to Structures (ii) Self Refrential Structures. (Jan 11)

Module - 8

1. Differentiate between structures and unions. (Feb 16)
2. Explain the union (Aug 13/ July 12)
3. Explain Unions (Jan 11)

Module - 9

1. Explain about stream pointer **(July/Aug15)**
2. Write notes on the file Handling of C-language. **(Feb14)**
3. Write a program to open a file 'SOURCE' and display the contents of that file on to the screen. **(Feb14)**
4. Write a C program to check for a given word in the file. **(Aug 11)**

Module - 10

1. Write notes on standard I/O functions and character I/O functions. **(Feb 16)**
2. Briefly discuss about string input / output functions. **(Feb 16)**
3. Briefly discuss about formatted input / output functions with examples. **(Feb 16)**
4. Write about file handling in 'C' with suitable examples. **(Feb 16)**
5. Explain how to convert a binary file from a text file. **(July/Aug15)**
6. Explain about Templates **(Feb14)**
7. Write a 'C' program to transfer the contents of one file into another. **(July 12)**
8. Explain different modes of opening files with their syntax? **(Feb 12)**
9. Write a C program to accept student data using a structure and write into the file. **(Aug 11)**
10. What are standard library functions in files? Explain converting file type. **(Aug 11)**
11. Write a C program to copy contents of one file into another. **(Aug 11)**
12. What are different input/output functions. **(May 11)**

Module -11

1. Explain about terminal character I/O **(July/Aug15)**
2. Write a 'C' program to write one character at a time to file. **(July/Aug15)**
3. Discuss the use of member functions get and put. **(Feb15)**
4. Write a C program to create a file using a structure called student having fields as Rno, name, marks and compute the total. **(Feb 12)**
5. Write a C-program to read data from a file INPUT and write it to a file OUTPUT. **(Jan 11)**

5. SUBJECT DETAILS

5.4 ELEMENTARY INFORMATION TECHNOLOGY

5.4.1 Objectives and Relevance

5.4.2 Scope

5.4.3 Prerequisites

5.4.4 Syllabus - O.U.

5.4.5 Suggested Books

5.4.6 Websites

5.4.7 Experts' Details

5.4.8 Journals

5.4.9 Trends and Developments

5.4.10 Student Seminar Topics

5.4.11 Session Plan

5.4.12 Tutorial Plan

5.4.13 EIT Activity Plan

5.4.13 Question Bank

OBJECTIVES AND RELEVANCE

Information technology is the engine used to drive useful information systems. This includes computers, S/W, Internet, intranet and telecommunication systems. Information technology provides the means for collecting, storing, encoding, processing, analyzing, transmitting, receiving and printing text, audio and video information.

5.4.2 SCOPE

The main scope of this subject is to explain a beginner how a computer works. This subject dwells on fundamentals that one must learn in order to pursue virtually any endeavor in IT field. It trains students with the concepts needed to lay a solid foundation for joining the exciting computer field.

5.4.3 PREREQUISITES

It requires basic knowledge of the law of the land and also ethical and moral values. It also requires ability of the student to analyse what is right and what is wrong while arriving at a conclusion.

5.4.4 SYLLABUS - O.U.

UNIT - I OBJECTIVE

- i. To understand how data is stored inside a computer and what are the system elements.
- ii. To know various types of S/W
- iii. To study different kinds of computers, programming languages.
- iv. To learn about an operating system and their functions.

SYLLABUS

Digital Age: Digital basic of computers, Data information, Hardware, input,output, memory, communication hardware, software, application software, system software, communications, Five kinds of computers, development in communication technology, connectivity and interactivity.

Five Generations of programming languages, programming languages used today, object oriented & visual programming.

Operating Systems: Booting, managing storage, resources, files tasks, common operating systems, windows 95/98, DOS, Windows – NT.

UNIT - II OBJECTIVE

- i. To know about CPU, its parts and their functions.
- ii. To understand various input devices, output devices, pointing devices and secondary storage devices.
- iii. To learn about compression & decompression.

SYLLABUS

Processors: The CPU and main memory, Data representation, microcomputer system unit, input and output devices, keyboard, pointing devices, source, data entry devices, softcopy output, hardcopy output more output devices. Diskettes, hard disks, optical disks, flash memory, magnetic tape, compression and decompression.

UNIT - III

OBJECTIVE

- i. To understand internet, www, networks and communication channels
- ii. To know new internet technologies.

SYLLABUS

Telecommunications: Data, Video, Audio communication, the internet, the world wide web, new internet technologies, communication channels, networks, conduits of communication, communication networks, local networks, factors affecting communications among devices.

UNIT - IV

OBJECTIVE

- i. To study file management system and also database management systems.
- ii. To learn various applications S/W's and their uses.

SYLLABUS

Files and Databases: Data Storage hierarchy, file management, file management systems, Database management systems, type of database organization, features of a DBMS.

Application Software: Common features of software, word processing spread sheet, software for cyber space, Internet programming, HTML, XML & Active x

UNIT - V

OBJECTIVE

- i. To know about various organizations, departments, and their tasks.
- ii. To learn the phases the system analysis and design.
- ii. To understand various security issues.

SYLLABUS

Information systems: Organizations, departments, tasks, management levels, management information systems, Six phases of system analysis and design.

Software Development: Programming as a five step procedures.

Security Issues: Threats to computers and communication systems. Safeguarding computers and communications.

5.4.5. SUGGESTED BOOKS

TEXT BOOKS

- T1. Using Information Technology, Williams and Sawyer, Tata McGraw-Hill

REFERENCE BOOKS

- R1. Aksoy & DeNardis, "Introduction to Information Technology", Cengage Learning , 2006.
- R2. Information Technology ,Dennis P. Curtin, Kim Foley, Kunal Sen, Cathleen Morin, Tata McGraw-Hill
- R3. Introduction to Information Technology :-ITL ESL, Pearson

WEBSITES

1. www.mit.gov.in
2. www.ciol.com
3. www.iiit.net
4. www.itub.org
5. www.developers.net

5.4.7 EXPERTS' DETAILS

INTERNATIONAL

1. Mr. Elizabeth lane lawley, Ph.d,
Associate Professor, Rochester Institute of Technology,
Newyork Email: ell@mail.rit.edu
Ph: 5854756896.
2. Mr. Henrylucas, Prof.of information
systems, Robert M. Smith School of
Business, University of Maryland, USA.
Emial: hluca@rhsmith.umd.edu.
Ph: (301) 405 - 0100

NATIONAL

1. Mr. Subhashis Banerjee
Ph: 91-11-26591288
Email: suban@cse.iitd.ernet.in
2. Mr. Hemangee Kapoor
Ph: 91-361-2582363
Email: hemangee@iitg.ernet.in
3. Mr. Sreenivasa Kumar
P Ph: 91-44-2257-4366
Email: psk@iitm.ac.in
4. Mr. Sukhendu Das Ph:
91-44-2257-4367
Email: sdas@iitd.ac.in

5.4.11 SESSION PLAN

S.No	Lecture	Topics as per OU	Module	Contents	Suggested	Page No.
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No.	syllabus		No.	Books		
UNIT-I						
1	L1	Introduction to Information Technology	M1	Information concepts & Processing	T1-Ch.7.1	289 – 289
	L1	Introduction to Information Technology	M2	Basic concepts of IT	T2-Ch.2.1	89
	L2	Introduction to Information Technology	M3	Data Processing Data and Information	T2-Ch.2.1	93
	L3	Elements of Computer System	M4	Classification History of computers	T1-Ch. 1	9-11
	A1	Seminar	M5	Types of Computers	T1-Ch.1	14-20
	L4	Hardware	M6	CPU Memory Unit	T2-Ch.2	22-26
	L5	Hardware	M7	I/O Devices	T2.Ch.4	89-115
	L6	Hardware	M8	Data Representation	T3-Ch.5.2	
	A2	Case Study	M9	Auxillary Storage Devices	T2.Ch.3	62-81
	L7	Software	M10	System S/W	T1-Ch.3.1	98-102
	L8	Software	M11	Application S/W	T1-Ch.3.1	98-102
	L9	Software	M12	Utility Packages	T1 Ch 4	154-156
	L10	Programming Languages	M13	Classification Machine Code Assembly Language		
	L11	Programming Languages	M14	Higher Level Languages	T2. Ch9	229-230
A3	Group Discussion	M15	Fourth Generatin Languages	T2. Ch9	230	
L12	Programming Languages	M16	Translators: Assembler, Compiler, Interpreter			
UNIT-II						
2.	L13	Operating Systems	M1	Concept as resource manager Coordinator of a processor	T2.Ch5	124
	A4	Seminar	M2	OS as coordinator of devices and memory		
	L14	Operating System	M3	Concept of priorities, protection and parallelism	T2.Ch 5	126
	L15	Operating System	M4	Command Interpreter	T1.Ch3	104
	A5	Case Studies	M5	Family of Windows Operating System	T2.Ch6	143
S.No	Lecture No.	Topics as per OU syllabus	Module No.	Contents	Suggested Books	Page No.
2	L16	Operating System	M6	Typical Commands of Linux/Windows	T1.Ch4	163
	L17	Communications	M7	Client Server Systems	T1.Ch7	321-330
	L18	Communications	M8	Computer Networks	T2.Ch 14	374
	L19	Communications	M9	Network Protocols	T2.Ch 14	399
				Communication		

A6	Group Discussion	M10	Technology Development- A Bane or Boon		
L20	Communications	M11	LAN ,WAN	T2.Ch 14	395
L20	Communications	M11	Internet Facilities through WWW	T1.Ch2	64-79
A7	Case Study	M12	Internet facilities through Mosaic, Gopher	T1.Ch2	64-79
L21	Communications	M13	Scripting Languages - HTML	T1.A25	
L22	Communications	M14	Communication Channels	T2.Ch.14	378
L22	Seminar	M15	Factors affecting communication among devices	T2.Ch14	400
A8	Quiz	M16	Unit I , II		
UNIT - III					
3					
L23	Files and Databases	M1	Data Storage Hierarchy File Management Systems	T1-Ch.8.1	348-348
L24	Files and Databases	M2	Database Management System	T1-Ch.8.2	351 – 352
A9	Seminar	M3	Types of DBMS	T1-Ch.8.3	353 – 358
L25	Files and Databases	M4	Features of DBMS	T1-Ch.8.4	359 – 360
A10	Case Study	M5	FPS Vs DBMS		
L26	Information Integrity and Computer Security	M6	Preserve Software - Concepts and components of security	T2.Ch17	468-470
L26	Information Integrity and Computer Security	M7	Preventive measures and treatment	T2.Ch.17	485-490
A11	Group Discussion	M8	Types of software for giving security to computers		

Module 8:

1. How data is represented in computers? **(July/Aug15)**
2. Discuss various data representation mechanisms? **(Feb 12)**
3. What is instruction cycle? Explain the different phases of instruction cycle. **(May 11)**
4. Convert the following: **(Aug 11)**
(i) $(101101.1111)_2 = ()_8$ (ii) $(534.61)_8 = ()_2$ (iii) $(AB42)_{16} = ()_2$ (iv) $(124)_{10} = ()_8$
5. Convert the following numbers **(Jan 11)**
(a) $(142)_8 = ()_2$ (b) $(75 AB)_{16} = ()_2$ (c) $(10100011)_2 = ()_8$ (d) $(75)_{10} = ()_2$

Module : 9

1. Explain compression and decompression. **(July/Aug15)**
2. Explain how data is stored in computer. **(Feb/Mar15)**
3. Explain compression and decompression techniques. **(Feb14)**
4. Write about (i) Optical disk and (ii) Hard disk **(Feb14)**
5. What is compression? Why it is important? **(Aug13/ Aug 12)**
6. Compare and contrast the Hard disks, optical disk. **(Aug 11)**
7. Explain the compression and decompression techniques in detail. **(Aug 11)**
8. Explain the data storage method on magnetic disk **(Jan 11)**
9.
 - i. Differentiate between optical disk and flash memory **(Jan 11)**
 - ii. Write about the decompression techniques
10.
 - i. Explain in detail compression and decompression. **(May 11)**
 - ii. Explain about secondary storage devices.

Module 10:

1. Define Software. Differentiate between System Software and Application Software. **(Feb 16)**

Module 11:

1. Distinguish between application software and system software. **(Aug 12)**
2. Discuss the common features of application software? **(Feb 12)**
3. Distinguish between System software and application Software. **(May 11)**

Module : 12

1. Define the following terms with example: (i) Games Software (ii) Business Software **(Jan 11)**

Module : 13

1. What is a machine cycle? Explain how the instruction is processed? **(Feb 12)**

Module : 14

1. Discuss five generation of programming languages. **(July/Aug15/ Feb/Mar 15/ Aug 13)**
2. Write about the generations of programming languages **(Jan 11)**
3. Explain the five generations of programming languages **(May 11)**

Module: 15

1. Define the following terms with example: Fourth Generation Computers **(Jan 11)**

Module: 16

1. Define translators. Differentiate between compiler and interpreter. (Feb 16)
2. Define the following terms.
i) Machine language ii) Assembly language iii) Compiler iv) Interpreter (July/Aug15)

UNIT - II**Module : 1**

1. Define operating system. What are the features of operating system. Explain about DOS and windows NT operating system. (July/Aug15)
2. Define operating system. Explain its functions. (Feb14)
3. What is Operating System? What are the functions of operating system? Explain in detail? (Feb 12)

Module 3:

1. What are the principal functions of the Operating system? (Aug 12)
2. What are different types of database organizations and give the features of DBMS? (Aug 12)

Module 4:

1. What are the conventions used in naming the files in DOS? (Aug 12)
2. Describe any five DOS commands with examples. (Aug 11)

Module 5:

1. What is Windows-NT? Explain. (Feb/Mar15)
2. Write the features of Windows NT. (Jan 11)
3. Compare Windows 98/95, DOS, Windows NT operating systems. (May 11)

Module : 6

1. Write 6 typical commands of MS windows. (Feb 16)

Module : 8

1. Define Network. Explain different types of networks with example. (July/Aug15)
2. Explain types of networks. (Feb14)

Module : 9

1. Define network and give topologies of networks. (Feb/Mar15)

Module : 10

1. What are the developments taken place in communication technology? Explain. (Feb 12)
2. Explain the communication technologies and its developments. (Jan 11)
3. Explain the following:
(i) Data communication (ii) Video communication (iii) Audio communication (Feb/Mar15)
4. i. Explain the characteristics of video conferencing? (Feb 12)
ii. Explain the functionality of fax and voice mail?

Module : 11

1. Differentiate between internet and intranet. (July/Aug15)
2. Explain LAN, MAN, WAN. (Feb/Mar15)
3. What is WWW? Explain. (Feb14)
4. i. What is internet, its connections, its address and features? (Aug 12)

- ii. What are the attributes of the web and how can you find information on it? (May 11)
- 5. Write a note on internet and WWW. (May 11)
- 6. What is the difference between internet and intranet. (Aug 12)
- 7. What are local area networks? What different topologies possible for local networks? (Feb 12)
- 8. i. Differentiate between LAN , MAN & VAN. (Jan 11)
- ii. What are the components of LAN?
- 9. Define the following terms. (Aug 11)
(a) LAN (b) WAN (c) WWW
- 10. Write the importance of Local Area Networks. (Aug 11)

Module: 12

- 1. Write the following (i) WWW (ii) Gopher (Feb 16)
- 2. Explain about any two new internet technologies. (Feb/Mar15)
- 3. Explain few internet technologies (Aug13)
- 4. What are the factors to be considered to measure the Internet technologies? (Aug 11)
- 5. Explain the internet technologies and its features. (Jan 11)

Module : 14

- 1. Define communication channel. Write about following communication channels: (Feb 16)
(a) Twister pair cable (b) Coaxial cable (c) Fiber optic cable
- 2. What is a communication channel? Explain different types of communication channels. (July/Aug15)
- 3. Explain differen types of communication channels. (Feb14)
- 4. What are communication channels? Enumerate them. (Aug 12)
- 5. Define communication channel? (Feb 12)
- 6. Explain the various communication channels in detail. (Aug 11)
- 7. Explain the parameters used to measure the efficiency of communication channel. (Jan 11)
- 8. What are the different types of wired and wireless channel. (May 11)
- 9. i. Explain the functions of communication devices. (Aug 11)

Module : 15

- 1. Explain the factors affecting communication among devices. (July/Aug15)
- 2. Explain the factors affecting communication devices. (Feb14)
- 3. What are the factors that affect the communication among devices. (Jan 11)
- 4. What are the factors that affect the communication among devices (May 11)

UNIT - III

Module : 1

- 1. Explain Data Storage hierarchy in detail. (Feb 16)
- 2. What are the advantages and disadvantages of FMS? (Feb/Mar15)
- 3. Explain the data storage hierarchy. (Feb14)
- 4. What is the file management? What are the advantages and disadvantages of file management ? (Aug13/ Aug 12)
- 5. i. Explain the functions of file manager, file descriptors and file access permission. ((Aug13/Jan 11)
- 6. What is data storage hierarchy ? Why is the key field important? (Aug 13)

List the features of HTML & XML. (Feb 12)

- ii. What is data storage hierarchy ? Why is the key field important?
- 8. Explain the data storage methods in detail. (Jan 11)

Module : 2

1. Define DBMS. What are the features of DBMS? (Feb 16)
2. Define DBMS. How many ways the database is organized. Explain. (July/Aug15)

Module : 3

1. Explain the types of database organisation. (Feb14)
2. What are the different types of Database organizations. (May 11)
3. Write short notes on security in computers and communication. (May 11)

Module : 4

1. What are the advantages of DBMS? (Feb/Mar15)
2. Give the features of DBMS. (Feb14)
3. Discuss the features of DBMS? (Feb 12)
4. Write and explain the feataures of DBMS. (Jan 11)

Module : 5

1. Differentiate between file management system and database management system. (July/Aug15)
2. Compare and contrast DBMS and FPS. (May 11)

Module : 6

1. Explain Pervesh Software. (Feb 16)
2. Differentiate between the term threat, virus, and vandalism. (July/Aug15)
3. What are the threats to computers and communication systems and how to safeguard computer and communication? (Feb/Mar15)
4. What are the threats to computer and communication systems? (Feb14)
5. Explain the threats that effect the communication. (Aug 12)
6. i. List out 6 security threads to computers and communication systems? Explain the details of each one of them. (Feb 12)
ii. Write short notes on security in computers and communication.
7. Write short notes on Threats to computer (Aug 11)
8. Explain the threats that effect the communication. (Jan 11)

Module : 7

1. Discuss safeguard computer and communication. (July/Aug15/ Feb 14)

Module : 8.

1. What are the concepts and components of security of information technology? (Feb 16)

UNIT - IV**Module : 1**

1. Write short notes on Five phases in Software development. (Aug 11)

Module : 2

1. Write short notes on phases of Software development. (Jan 11)

Module : 4

1. What is an information system? Discuss its need and importance. Explain six phases of system analysis

- and design. (July/Aug15)
2 Write phases of system analysis and design. Explain. (Aug 11)

Module : 5

1. Explain the phases of system desion. (Jan 11)

Module : 6

1. Explain SDLC. (Feb 16/Feb14)
2. Explain six phases of system analysis and design. (May 11)

Module : 7

1. Define MIS. Explain different levels of Management. (Feb/Mar15)
2. List and explain different types of departments. (Aug 12)
3. Explain different components of security. (Aug 12)
4. What are the issues to design a procedure for task assignment? Explain. (Aug 11)

Module : 8

1. Define the following terms: (i) Organization (ii) Tasks (Feb/Mar15)
2. Define MIS. explain the levels of MIS. (Aug13)
3. What are the levels of management? Explain. (Jan 11)

Module : 9

1. What is MIS? How to develop MIS? (Feb 16)
2. What are the three levels of management? (Feb 16)
3. Write short notes on management information system? (Feb 12)

Module : 10

1. What are the departments, tasks and levels of managers in an organization? Discuss. (Feb 12)

UNIT V

Module : 3

1. Write any two IT applications which impact positively on society. (Feb 16)

Module : 5

1. Write about following IT application:Business application. (Feb 16)

Module : 7

1. Write about following IT application: Multilingual application (Feb 16)

5. SUBJECT DETAILS

5.5 MODERN ECONOMIC ANALYSIS

5.5.1 Objectives and Relevance

5.5.2 Scope

5.5.3 Prerequisites

5.5.4 Syllabus - O.U.

5.5.5 Suggested Books

5.5.6 Websites

5.5.7 Experts' Details

5.5.8 Journals

5.5.9 Trends and Developments

5.5.10 Student Seminar Topics

5.5.11 Session Plan

5.5.12 Tutorial Plan

5.5.13 Activity Plan

5.5.14 Question Bank

OBJECTIVES AND RELEVANCE

Modern Economic Analysis is both a challenging and a rewarding subject. A mastery over it bestows a powerful tool for understanding and thinking over a remarkable range of business issues and phenomena of decision- making.

It seeks to provide analytical framework and understanding of economic behaviour, with a sharp and logical thinking in the decision process.

5.5.2 SCOPE

Managerial Economics drew heavily upon economic analysis for its decision-making process. The development of mathematical and statistical techniques for analyzing situations faced by a managerial economist have prompted their use-in decision-making process.

5.5.3 PREREQUISITES

Economics: Managerial Economics extends from traditional economic theory to operations research. Mathematics, statistics and the theory of decision-making.

Management: Managerial Economics consists of demand analysis and forecasting, production and cost, market structure, pricing and output, macro economic policies and government policy are essential for management decisions.

5.5.4 SYLLABUS - O.U.

UNIT - I OBJECTIVE

Here the student will learn the frame work within which we are going to study Managerial Economics. Interrelation of Managerial Economics with other disciplines.

SYLLABUS

The nature and scope of managerial economics, Fundamental concepts of managerial economics.

UNIT - II OBJECTIVE

In this unit the student will learn about the behaviour of commodity demand, demand function, sources & its nature. He can also learn about the elasticity of demand its determinants and steps involved in the empirical estimation.

SYLLABUS

Demand analysis, concepts of demand, demand elasticities

UNIT - I II OBJECTIVE

In this unit the student will learn about the law of supply its determinants, laws of returns, isocost-isoquant analysis & various aspects of empirical production function. He also learns about the basic difference between the various cost concepts, different sources of economies of scale.

SYLLABUS

Production and cost analysis and principles: Production function, single output isoquantum, average cost curve, Laws of returns, Laws of supply, Price determination under different competitive situations..

UNIT - IV

OBJECTIVE

The students can apprehend the meaning, relevance and implications of any movement in these aggregates.

SYLLABUS

National Income: Concepts, measurement and determinants. Planning: The machinery for planning in India, Salient features of India's Five year plans.

UNIT - V

OBJECTIVE

The students can understand the working system of various Financial Institutions, their role and functions.

SYLLABUS

Indian Financial Systems, Functions and role of Reserve Bank of India. Conventional banks and Industrial Finance. Term lending Financial Institutions role and functions.

5.5.5. SUGGESTED BOOKS

TEXT BOOKS

- T1. Dhiraj Bhattacharya & Pranab Chakraborti, "Fundamentals of Business Economics", A.H. Wheeler & Co Ltd., 1986
- T2. Barry Keating & J. Holton Wilson, "Managerial Economics", Biztantra, Second edition, 2003.
- T3. Dominick Salvatore, "Managerial Economics", Thomsan, Fourth edition, 2001.
- T4. D.N. Dwivedi "Managerial Economics, 6th Revised edition.
- T5. Gordon, Natarajan "Financial Markets and Services.

REFERENCE BOOKS

- R1. Managerial Economics, Paul, Mote & Gupta, Tata McGraw Hill 12002.
- R2. Economic Environment of Business, Bhattacharya & Chakrabarti, 2004.
- R3. The Indian Economy, S.K. Ray, Prentice Hall 2006.

5.5.6 WEBSITES

1. www.economicssurvey.com
2. www.macroskan.com
3. www.epw.org.in
4. www.rbi.org
5. www.cmie.com

JOURNALS

INTERNATIONAL

1. Human resources management, International Journal, Global Economic Review.
2. Journal of International Economics

NATIONAL

1. The economics challenger
2. The Indian journal of industrial relations
3. Business and Economic facts for you
4. The Journal of IPE

SESSION PLAN

S.No	Lecture No.	Topics in O.U. Syllabus	Module s	Content	Suggested Books	Page No
UNIT – I						
1	L1	Introduction to Modern Economic Analysis	M1	Nature and Scope of Economics to Business	T1-Ch .1	13 – 15
	L2	Significance of managerial economics	M2	Significance of economics Role & responsibility	T1-Ch .1	3 – 7
	L3			Economics as Applied Science Distinction of Micro/ Macro; normative/positive Economics	T3-Ch .1	15 – 16
	A1	Case study	M3	Dabur India Limited Growing Big and Global	http://casestudyanswersolutions.blogspot.in/2013/08/managerial-economics.html	
	L4	Concepts of managerial concepts	M4	Fundamental concepts: Opportunity cost incremental principle	T4-Ch .3	44 – 47
	L5	UGC NET		time perspective discounting principle	T4-Ch .3	47– 50
	A2	Seminar	M5	Seminar on Equi -marginal principle	http://www.yourarticlelibrary.com/economics/principle-of-equi-marginal-utility-explained-with-diagram/38944/ T4-Ch .3	
	L6	Economic models	M6	Assumptions & economic models & types Methods of Modern Economic Analysis	T3-Ch .5 T3-Ch .2	210 – 215 40 – 42
	A3	Group discussion	M7	In our economic matters, there is an excessive tendency towards the thinking rather than doing	http://www.indiabix.com/group-discussion/in-our-economic-matters-there-is-an-excessive-tendency-towards-the-thinking-rather-than-doing/	
	L7		M8	Equilibrium concepts Variable functions	T1-Ch .2 T3-Ch .1 T3-Ch.13	40 – 60 33 – 37 247 – 249
UNIT - II						
2	L8	Demand Analysis, Concepts of Demand, Demand Elasticities UGC NET	M1	Demand determinants Individual Demand Market Demand	T3-Ch .3 T3-Ch.3	91 – 93 94 – 97
	L9	Demand Analysis	M2	Demand Schedule, demand curve Exceptions Extension & Contraction; increase & decrease of demand.	T1-Ch .3 T1-Ch .4 T1-Ch .5 T3-Ch .1	32 – 55 96 – 97 34 – 35 73 – 77

S.No	Lecture No.	Topics in O.U. Syllabus	Modules	Content	Suggested Books	Page No
2	A4	Seminar	M3	Law of Demand & its Assumptions	T1-Ch.3 https://en.wikipedia.org/wiki/Law_of_demand	
	L10	Demand Analysis UGC NET	M4	Demand distinctions: types Consumer/producer goods Perishable/durable goods Autonomous/company demand Industry/long run demand	T1 –Ch.5	105 – 110
	L11				T4-Ch.10	251-253
					T4-Ch.7	151 – 159
					T4-Ch.7	170-172
	A5	Case Study	M5	Elasticity of demand	http://businesscasestudies.co.uk/business-theory/marketing/elasticity-of-demand.html#axzz3mjEYtYoj	
	L12	Concepts of utility	M6	Law of Diminishing Marginal Utility UGC NET	T1-Ch.4	59 – 60
	L13			Law of equimarginal utility Elasticity of Demand Types	T1-Ch4	78 – 86
					T2-Ch3	102 – 117
	A6	Group discussion	M7	Advertising is a Waste of Resources	http://www.indiabix.com/group-discussion/advertising-is-a-waste-of-resources/	
L14	Measurement of demand UGC NET	M8	Measurement of Price Elasticity of Demand Point Elasticity & Arc elasticity	T2-Ch.3	102-103	
				T3-Ch.3	103-105	
				T3-Ch.3	105-106	
A7	Quiz	M9	Elasticity of Demand	http://ingrimayne.com/econ/elasticity/quiz5i.htm		
L15	Elasticity Of Demand	M10	Problem solving on price, income & cross elasticity's Factors influencing elasticity of demand Application of Economics to Business Significance & decision making	T3-Ch.3	110 – 114	
				T-1 Ch.1	6 – 8	
UNIT III						
3	L16	Production and Cost Analysis	M1	Short run. Isoquants-types, properties, ridge lines	T1-Ch.5 T1-Ch.6	91 – 95 250 – 252

S.No	Lecture No.	Topics in O.U. Syllabus	Modules	Content	Suggested Books	Page No
UNIT IV						
4	L 28	National Income UGC NET	M 1	Meaning of NI Concepts: GNP, GDP, NNP, NDP NI at factor cost, NI at market prices per capita income	T 4- Ch.1 7 T 1- Ch.1 1	36 – 37 210 – 220
	L 29	Concepts of National Income	M 2	Measurement of NI Product Method Expenditure Method Income Method	T 4- Ch.1 7 T 4- Ch.1 7	4 37 4 42
	A 12	Case study	M 3	Inflation in India	http://www.bankol.com/managerial-economics/case-study-inflation-in-india/	
	L 30	Measurement of National Income	M 4	Estimating NI in India Methodology of Estimation	T 4- Ch.1 7	4 42 – 4 43
	L 31			NI Accounting Meaning Avoiding Double counting	T 4- Ch.1 7 T 1- Ch.1 1	2 13
	A 13	Group discussion	M 5	Is Foreign Direct Investment (FDI) in retail sector good for India? (Influence on National Income)	http://www.indiabix.com/group-discussion/is-foreign-direct-investment-fdi-in-retail-sector-good-for-india/	
	L 32	Five year plan	M 6	Problem Solving & silent features of Five year plan	T 1- Ch.1 3	2 32
	L 33			Planning Indian Plan Strategy Performance of Indian Plans	T 4- Ch. 6	
	A 14	Seminar	M 7	Twelfth Five Year Plan	http://planing.com/issio.nic.in/plan/planrel/	
	L 34	Review of Five Year Plan	M 8	India's Five Year Plans Features, Review	T 4- Ch.1 7	5 83 - 58 8
	A 15	Quiz	M 9	Indian Economy	http://www.gkduiya.com/indian-economy-quiz	
UNIT -V						
5	L 35	Indian Financial System	M 1	Indian Financial Systems	T 5 -Ch.1	
	A 16	Seminar	M 2	RBI Functions & its role	T 5 -Ch.1 3 – 1 2 http://www.timespro.com/media-centre/blog/role-and-function-of-the-reserve-bank-of-india-rbi/23-role-and-function-of-the-reserve-bank-of-india-rbi	

S.No	Lecture No.	Topics in O.U. Syllabus	Modules	Content	Suggested Books	Page No.
5	L36	Financial Institutions	M3	Role and Monetary Policy of of Financial Institutions Functions	T5-Ch.1 T5-Ch.1 T4-Ch.28	3 – 12 3 – 74 598 – 603
	A17	Case Study	M4	Reserve Bank of India's Tightening Monetary Policy: An Impediment to Economic Growth?	http://www.ibscdc.org/Case_Studies/Economics/Monetary%20Policy/MOP00231RC.htm	
	L37	Industry finance	M5	Conventional Banks Industrial Finance Institutional Finance	T6-Ch3. T3-Ch.6	49, 50 55-60
	A18	Seminar	M6	Monetary & Fiscal Policies UGC NET	http://www.snbmтуalfunds.com/reliance-any-time-money-card-collects-rs-1500-crore/	
	L38	Term Financial institutions	M7	Term lending Financial Intuitions	T4-Ch.8	
	A19	Group Discussion	M8	RBI can not control inflation with its temporary monetary policies	http://www.careerride.com/view.aspx?id=3702	
	L39	Money Markets	M9	Regulation of Money Market	T3-Ch.6 T6-Ch.49,50	
	L40			Methods of Credit Control Promotional Role of Monetary & Fiscal Policies	T3-Ch.6 T6-Ch.49,50 R3-Ch.6	
	A20	Quiz	M10	India's Finance & Money Market Awareness	http://www.gktoday.in/quiz-224-indias-finance-money-market-awareness/	

QUESTION BANK

UNIT - I

Module: I

1. "Managerial Economics is Economics applied in decision making". Discuss. (July/Aug 15)
2. Define managerial economics. How does it differ from Traditional economics. (Feb/Mar 15/ Aug 11)
3. Explain the nature and scope of managerial economics. (Feb14/ Aug 13)
4. Define managerial economics and explain its scope. (Aug 12/ Jan 11)
5. Define Managerial Economics and explain its nature. (Feb 12)
6. Discuss the nature and scope of Managerial Economics. (May 11)

Module: 3

1. Explain the basic concepts of managerial economics in business organization. (July/Aug 15)
2. Explain the fundamental concepts of managerial economics. (Feb/Mar 15)
3. Explain the following concepts:
 - i. Time perspective concept
 - ii. Incremental principle
 - iii. Discounting principle (Feb14)
4. Write about Opportunity cost, Discounting principle, Incremental principle. (Aug 13)
5. Explain the following: (Feb 12)
 - (a) Incremental cost concept
 - (b) Time perspective concept
 - (c) Opportunity cost concept
6. Explain the following concepts: (May 11)
 - (a) The incremental concept
 - (b) Equi-managerial concepts
 - (c) The time prospective concept
7. Explain the following concepts: (Jan 11)
 - (a) Concept of opportunity cost
 - (b) Discount principle
 - (c) Risk and uncertainty
8. Briefly explain different fundamental concepts of Managerial economics. (Aug 11)

UNIT - II

Module: I

1. Define Demand. What are the various determinants of demand? Explain. (July/Aug 15)
2. What is demand? Explain the determinants of demand. (Aug 12)

Module: 2

1. Explain the importance of demand analysis in the decision making process by a business firm. (Feb/Mar 15)
2. What is law of demand? Explain the determinants of demand? (Feb14)
3. Explain the law of demand and its exceptions. (Feb 12)
4. Explain the law of demand and also explain the factors affecting demand of the product. (Aug 11)
5. Discuss the law of demand its assumptions. (Jan 11)

Module: 4

1. Explain the following: (i) autonomous vs derived demand. (ii) industry demand vs firm demand (iii) cross elasticity of demand. (Aug13)
2. Explain the factors affecting the demand for a commodity. (Feb 12)

Module: 5

1. Explain the elasticity of demand and its usefulness in managerial decision making. (Feb14)

Module: 8

1. Explain how fundamental concepts of managerial economics are useful in the decision making process. (Aug 12)

Module: 9

1. Explain the meaning and types of Income Elasticity of Demand and also its significance. (July/Aug 15)

2. Explain price elasticity of demand its importance. (Feb/Mar 15)
3. What is price elasticity. What are the factors influence it. (Aug13)
4. Explain the methods of measuring price elasticity of demand. (Aug 12)
5. i. Explain the various types of price elasticity of demand. (Aug 11)
- ii. Given the demand function $Q_d=125-2 P$, derive the demand curve at price Rs.10, Rs.20, Rs.30, Rs.40 and Rs.50. (Q_d =quantity demand and p is price)
6. Explain the elasticity of demand its various types. (May 11)
7. Explain the importance of elasticity of demand in decision making. (May 11)
8. Given the demand function $Q_d=10-2p$, find the quantity demanded when price is rs 2 rs 3 rs4 and rs 5(Q_d =quantity demand and p is price) (May 11)
9. Explain the elasticity of demand and differentiate cross elasticity of demand from price elasticity of demand. (Jan 11)

UNIT - III

Module: 1

1. Explain the nature and behaviour of short-run cost curves. (Feb14)
2. Explain the law of diminishing returns. (Aug 11)

Module: 2

1. Explain the concept of production function and the law of returns to scale. (July/Aug 15)
2. Explain the law of returns to scale. What factors determines increasing returns to scale. (Feb/Mar 15)
3. Explain the characteristics of isoquant curves. (Feb14)
4. What is an Iso-quant? How it is used to explain returns to scale. (Aug13, Aug 12)

Module: 3

1. Define production function Explain the law of returns to scale. (May 11)
2. Define production function Explain the nature and various types of production function. (Jan 11)

Module: 4

1. What is law of supply. what are the factors and limitations of it. Explain the differences between law of variable proportion and returns to scale. (Aug13, Aug 12)

Module: 6

1. Explain the behaviour of Total cost, Total fixed cost and Total variable cost in the short-run.(Feb/Mar 15)
2. Discuss the uses of cost analysis in pricing decisions? (Feb 12)

Module: 9

1. Explain how price is determined by a monopolist in the short-run. (Feb 12)
2. What is perfect competition? How is price and output of a firm determined under conditions of perfect competition in the short-run? (Aug11)
3. How is price determined under perfectly competitive market? Explain? (Jan 11)

Module: 10

1. What is mono poly? How is price and out put determined by a monopolist in the long run? (May 11)

Module: 11

1. What is Monopoly? Explain equilibrium of a firm under Monopoly market structure. (July/Aug 15)

UNIT - IV

Module: 1

1. Explain the various concepts of National Income in detail. (July/Aug 15)

2. Define National income and explain the difficulties arise in the estimation of National income. **(Feb/Mar 15)**
3. What is National Income/ Explain different concepts of National Income. **(Feb14)**
4. Describe the basic concepts of national income and highlight the featur of national income **(Aug13)**
5. Explain following concepts: **(Aug 12)**
 - (a) National Income (b) Gross national Product (c) Net National Product
 - (d) Personal Income (e) Disposable Income
6. Define national income and explain its various concepts. **(Feb 12)**
7. What is National Income? Explain the various methods of estimation of National Income. **(Aug 11)**
8. What is national income explain the difficulties in the estimation of national income in India. **(May 11)**
9. Define national income and bring out its importance. **(Jan 11)**

Module: 2

1. Explain the difficulties in the estimation of national income. **(Feb 12)**
2. Write a note on machinery for planning in India. **(Jan 11)**

Module: 6

1. What is planning? Explain its relevance and usefulness after economic reforms. **(Aug 12)**

Module: 7

1. Write about the salient features of Five-year plans in India. **(July/Aug 15)**
2. Explain the features of 12th five year plan of India. **(Feb/Mar 15)**
3. Explain the main feataures of five year plans in India. **(Feb14)**
4. Evaluate the objectives and achievements of Five Year plans in India. **(Aug 11)**
5. What are the objectives of five year plans in India how far they were achieved? **(May 11)**

UNIT - V

Module: 3

1. Explain in detail the various functions of RBI in India. **(July/Aug 15)**
2. Explain the role of Reserve Bank of India in the economic development of India. **(Feb/Mar 15)**
3. Explain the functions of Reserve Bank of India. **(Feb14)**
4. Explain the role and functions of Reserve Bank of India? **(Aug13)**
5. Is there any change in the role of Reserve Bank of India after economic recession? Explain. **(Aug 12)**
6. Explain the role of Reserve Bank of India? **(Feb 12)**
7. Examine the role of reserve bank of India? **(Jan 11)**

Module: 4

1. Describe the main functions that a commercial bank performs. **(July/Aug 15)**
2. Write about conventional bank and industrial finance. **(Aug13)**
3. Explain the role of various conventional banks in the industrial development of India? **(Feb 12)**
4. Briefly explain the role of conventional banks in the development of industrial sector in India? **(May 11)**

Module: 5

1. Explain briefly about various institutional sources of Industrial finance in India. **(Feb/Mar 15)**
2. What are the different sources of Indutrial Finance in India? **(Feb14)**
3. Briefly explain various institutional sources of Industrial Finance in India. **(Aug 11)**

Module: 6

1. Examine the role and functions of Team lending institutions in India. **(Aug 12)**
2. Discuss the functions of teem lending financial institutions in India. **(Jan 11)**
3. Write a note on term lending financial institutions. **(Feb 10)**

Module: 9

1. Explain the qualitative credit control tools used by the Reserve Bank of India.
2. Explain the functions of reserve bank of India.

(Aug 11)
(May 11)

ENGLISH

CONTENTS:

1. OBJECTIVE AND RELEVANCE

2. SYLLABUS

3. SUGGESTED BOOKS

- TEXT BOOKS
- REFERENCE BOOKS

4. WEBSITES

5. JOURNALS

- INTERNATIONAL
- NATIONAL

6. SESSION PLAN

7. CASE STUDIES

Objective and Relevance

The following are the objectives of the course:

To enable the students to

- Communicate clearly, accurately and appropriately
- Know and use verbal and non-verbal communication appropriately
- Infer information from text
- Learn basic grammar of English language
- Use appropriate idiomatic expressions, one word substitutes etc.

SYLLABUS

UNIT I: OBJECTIVE

An objective of effective communication is to express a message. Expression can manifest itself through body language, signs, words or emotion. Communication is the process of creating and sending a message through a specific medium that carries the messages to the recipient. Once the message is received, the recipient then expresses a message back to the sender. This exchange continues until the dialogue is complete. In order for the expression to be considered effective, it must be accurately communicated and understood completely by the receiver.

SYLLABUS: Effective communication:

Role and importance of communication; Features of human communication; Process of communication; Importance of listening, speaking, reading and writing, Types of listening, tips for effective listening, Types of communication, One-way versus two-way communication; Barriers to communication.

UNIT II: OBJECTIVE

This unit enables the students to learn grammar. To learn types of sentences, degrees of comparison and make use of appropriate punctuation marks.

SYLLABUS: Remedial English:

Common errors, Tense and aspects, Connectives and correlative conjunctions, Simple Complex and Compound sentences, Voice, Concord, Direct and Indirect speech, Degrees of comparison, Question tags, Punctuations

UNIT III: OBJECTIVE

This unit introduces to the students regarding a type of communication i.e. written communication. To develop the writing skills of a student. Students will be able to write essays, paragraphs, letters and reports by the end of this unit.

SYLLABUS: Written Communication:

Paragraph writing, Précis writing, Expansion, Essay writing, Personal Letters, General reports

UNIT IV: OBJECTIVE

This unit enables the students to strengthen their vocabulary. They will be able to learn new words. And also one word substitutions.

SYLLABUS: Vocabulary:

Technical vocabulary, Homonyms, Homophones, Synonyms, Antonyms, Words often confused, One-word substitutes, Idiomatic usage, Affixes

UNIT V : OBJECTIVE

This unit introduces to the students the importance and strategies of reading comprehension. To learn methods or techniques of reading comprehension.

SYLLABUS: Reading comprehension and reading strategies:

The following five lessons are prescribed: 1. Dr. A.P.J. Abdul Kalam 2. Sathya Nadella 3. Azim Premji 4. Sachin Tendulkar 5. Sam Pitroda

Suggested Books:

- T1. E. Suresh Kumar, *Engineering English*, Orient Blackswan, 2014.
- T2. E. Suresh Kumar et al., *Communication Skills and Soft Skills*, Pearson, 2011.
- T3. Sanjay Kumar and Pushp Lata, *Communication Skills*, OUP, 2011.
- T4. Kavita Tyagi and Padma Misra, *Professional Communication*, PHI, 2011.
- T5. Meenakshi Raman and Sangeeta Sharma, *Technical Communication: Principles and Practice*, OUP, 2011.

Introduction to the Authors:

T1) E. Suresh Kumar :

K. S. Suresh Kumar is Assistant Professor, Department of Electrical Engineering, National Institute of Technology Calicut, Kerala. A product of IIT Madras, he has been teaching at NIT Calicut for the past twenty-four years. He handles courses on electric circuits, analog electronic circuits, pulse electronics, active filters, DSP, communication systems and power electronics. His research interests include active harmonic filtering, active power factor correction and flexible AC transmission systems. He consults in the area of energy auditing and conservation.

T2) Sanjay Kumar and Pushp Lata

a. Sanjay Kumar:

Dr Sanjay Kumar currently a Consultant in communication and soft skills training has an academic career spanning over 18 years. He has held teaching and administrative positions in various academic institutes. Dr Sanjay has to his credit numerous research articles and books and has been on the panel as a subject expert in different selection committees.

b. Pushp Lata:

Dr Pushp Lata currently Assistant Professor in the Languages Group at BITS Pilani has been associated with the group, since 1994. She did her P.G.D.T.E. from CIEFL, Hyderabad and Ph D from the University of Rajasthan. At BITS Pilani, she is the Nucleus member of Public and Media Relations unit. She is the Chief Editor of BITScan, a semester magazine of BITS. Dr Pushp Lata also has to her credit the designing, introduction, and teaching of the course Effective Public Speaking at BITS, Pilani.

T3) Kavita Tyagi and Padma Misra:

a. Kavita Tyagi:

KAVITA TYAGI (PhD) is Associate Professor and Head, Department of English, Bharat Institute of Technology (BIT), Meerut (Uttar Pradesh). She has more than 12 years of teaching experience. A member of various professional and academic bodies, Dr. Kavita Tyagi has published/presented many papers in national and international conferences/journals.

b. Padma Misra:

PADMA MISRAM (PhD) is Assistant Professor, School of Management, BIT, Meerut. She has more than 10 years of teaching experience. Dr. Padma Misra has presented/published several papers in national and international conferences/journals.

T4) Meenakshi Raman and Sangeeta Sharma:

a. Meenakshi Raman:

Meenakshi Raman is Professor and Head of the Department of Humanities and Social Sciences at the Goa Campus of the Birla Institute of Technology and Science (BITS), Pilani.

b. Sangeeta Sharma:

Sangeeta Sharma is an associate professor in the Department of Humanities and Social Sciences at the Birla Institute of Technology and Science (BITS), Pilani.

Unit wise syllabus coverage:

T1: E. Suresh Kumar, *Engineering English*, Orient Blackswan, 2014

This book covers 98% of first Unit, 80% of Unit II, 95% of Unit III, 100% of Unit IV, 100% of Unit V.

WEBSITES:

1. www.skillsyouneed.com/ips/what-is-communication.html
2. <https://learnenglish.britishcouncil.org/en/english-grammar>
3. www.kent.ac.uk/careers/sk/written-communication.htm
4. <https://www.vocabulary.com/>

JOURNALS:

INTERNATIONAL

1. Journal of Communication (Est. 1951)
2. Language Learning (Est. 1948)
3. Communication Research (Est. 1974)

NATIONAL

1. Research Journal of English Language and Literature
2. International Journal of Innovative Research and Advanced Studies
3. Written communication Journal

Session Plan

UNIT-I

Sl. No.	Unit	Syllabus	Modules	Sub Modules	Lecture No.	Suggested Books
1	Unit-I	Effective communication	Effective communication	Role and importance of communication	L1	T1
				Features of human communication	L2	T1
				Process of communication	L3	T1
				Importance of listening, speaking, reading, and writing	L4	T1
				Types of listening	L5	T1
				Tips for effective listening	L6	T1
			Types of communication	Non-verbal communication	L7	T1
				Verbal – Formal versus informal communication	L8	T1
				One-way versus two-way communication	L9	T1
				Barriers to communication	L10	T1

UNIT-II

2	Unit-II	Remedial English	Remedial English	Common errors	L11	T1
				Tense and aspects	L12	T1
			Conjunctions	Connectives and correlative conjuncts	L13	T1
			Sentences	Simple, complex and compound sentences	L14	T1
				Voice, concord, Direct and indirect speech	L15	T1
				Degrees of comparison	L16	T1
				Question tags, Punctuation	L17	T1

UNIT-III

3	Unit-III	Written Communication	Written Communication	Paragraph writing	L18	T1
				Précis writing	L19	T1
				Expansion	L20	T1
				Essay writing	L21	T1
				Personal Letters	L22	T1
				General reports	L23	T1

UNIT-IV

4	Unit 4	Vocabulary	Vocabulary	Technical vocabulary	L24	T1
				Homonyms, Homophones	L25	T1
				Synonyms, Antonyms	L26	T1
				Words often confused	L27	T1
				One-word substitutes	L28	T1
				Idiomatic usage	L29	T1
				Affixes	L30	T1

UNIT-V

5	Unit-V	Reading comprehension and reading strategies.	The following five lessons are prescribed:	Dr. A.P.J. Abdul Kalam	L31	T1
				Sathya Nadella	L32	T1
				Azim Premji	L33	T1
				Sachin Tendulkar	L34	T1
				Sam Pitroda	L35	T1

MCA Course Outcome		
Year - I Semester - I		
Course code	Course Title	Course Outcome
PC 101 IT	Discrete Mathematics	<ol style="list-style-type: none"> 1. Write an argument using logical notation and determine if the argument is or is not valid. 2. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described. 3. Understand the basic principles of sets and operations in sets. 4. Prove basic set equalities. 5. Apply counting principles to determine probabilities. 6. Demonstrate an understanding of relations and functions and be able to determine their properties. 7. Determine when a function is 1-1 and "onto". 8. Demonstrate different traversal methods for trees and graphs.
BS 101 MT	Probability & Statistics	<ol style="list-style-type: none"> 1. Understand the concepts of Probability, random variables and their distributions. 2. Understand the concepts of estimation and hypothesis testing for population averages and percentages. 3. Select and produce the appropriate tabular and graphical formulas for displaying vicariate data sets and carry out correlation, regression and chi-square analyses.
PC102IT	Computer Programming and Problem Solving	Ability to apply solving and logical skills to programming in C

PC103IT	Elements of Information Technology	Demonstrate the basic knowledge of computer hardware and software
HS101CM	Economic Analysis	1.To understand the Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. 2. To study the firm's financial position by analyzing the Financial Statements of a Company
MC 106 EG	English	1.To Understand nuances of language through audio- visual experience and group activities 2.Neutralization of accent for intelligibility which enhance employability skills of the students.
PC151IT	Programming Lab I (C Programming Lab)	1.Ability to write programs for different kinds of problems in C. Work confidently in compilers like C and others. 2. Ability to identify appropriate data type or data structure to given problem.
PC 152 IT	Programming Lab II (IT Workshop)	
Year - I Semester - II		
Course code	Course name	Outcome
HS201CM	Accounting & Financial Management	1.To critique basic accounting and financial management ideas that underlie and limit the usefulness of accounting and finance information. 2.Be able to explain the nature of, and apply, the measurement of assets, equities, revenues, expenses and income.
PC201IT	Principles of Object Oriented Programming	1.Develop applications for a range of problems using object-oriented programming techniques. 2.To design simple Graphical User Interface applications
PC202IT	Management Information Systems	1.The students understand the significance of Management in their Profession. 2.The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course. 3. The students can explore the Management Practices in their domain area
PC203IT	C++ and Data Structures	1.Ability to choose appropriate data structures to represent data items in real world problems. 2. Ability to analyze the time and space complexities of algorithms. 3. Ability to design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees. 4.Able to analyze and implement various kinds of searching and sorting techniques.
PC204IT	Computer Organization	1. Students understand in a better way the I/O and memory organization in depth. 2.To write assembly language programs for various applications
HS202EG	Communication Skills	1.To acquire vocabulary and use it contextually which Increase possibilities of job prospects.
PC251IT	PRACTICALS Programming Lab – III (OOP Lab)	1.Develop applications for a range of problems using object-oriented programming techniques. 2. To understand Graphical User Interface applications.
PC252IT	Programming Lab – IV (C++ Programming Lab)	1.To identify the appropriate data structures and algorithms for solving real world problems. 2.To implement various kinds of searching and sorting techniques. 3.To implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.

Year - II Semester - I

Course code	Course name	Outcome
PC301IT	Software Engineering	1.To translate end-user requirements into system and software requirements . 2. Identifies and apply appropriate software architectures and patterns to carry out high level. 3.Enables design of a system and be able to critically compare alternative choices. 4. Awareness of testing problems and will be able to develop a simple testing report
PC302IT	Database Management System	1. Fundamental knowledge of DBMS, database design and normal forms 2.Master the basics of SQL for retrieval and management of data.. 3. Acquainted with the basics of transaction processing and concurrency control. 4. Familiarity with database storage structures and access techniques
P3303IT	Design and Analysis of Algorithms	1.To analyze the performance of algorithms. 2.Enables to choose appropriate algorithm design techniques for solving problems. 3.To understand how the choice of data structures and the algorithm design methods impact the performance of programs.
PC304IT	Operating Systems	1.To apply optimization techniques for the improvement of system performance. 2. To design and solve synchronization problems. 3. To learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible. 4.Access controls to protect files to compare the different operating systems.
PC305CM	Operations Research	1.To formulate and solve problems as networks and graphs. 2.To solve the problems using special solution algorithms. 3. use CPM and PERT techniques, to plan, schedule, and control project activities. construct linear integer programming models and discuss the solution techniques. 4. To formulate pure, mixed, and binary integer programming models. solve the integer programming models using branch-and-bound method.
OE301EM	Organizational Behavior	1. To discuss the development of the field of organizational behaviour and explain the micro and macro approaches . 2. To analyze and compare different models used to explain individual behaviour related to motivation and rewards
PC351IT	PRACTICALS Programming Lab V (DBMS Lab)	1.Design database schema for a given application and apply normalization 2. Acquire skills in using SQL commands for data definition and data manipulation. 3. Develop solutions for database applications using procedures, cursors and triggers
PC352IT	Programming Lab VI (OS management)	1.Developing application programs using system calls in Unix. 2.Implementing interprocess communication between two processes. 3. To design and solve synchronization problems.Simulate and implement operating system concepts such as scheduling,deadlock management, file management, and memory

Year - II Semester - II

Course code	Course name	Outcome
PC401IT	Data Mining	1. To examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system. 2. Apply preprocessing statistical methods for any given raw data. 3.Extract interesting patterns from large amounts of data that can be used for further analysis,Choose and employ suitable data mining algorithms to build analytical applications . 4.To evaluate the accuracy of supervised and unsupervised models and algorithms
PC402IT	Computer Networks	1. To understand the basic knowledge of the computer network technology. 2. Functions of each layer in the OSI and TCP/IP reference model.. 3. To obtain the skills of subnetting and routing mechanisms. Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.
PC403IT	Unix Programming	1.To Understand the Unix Architecture ,use of basic command 2. To Explain administrator privileges, super user basic command to add, modify and delete users and to understand basics of File systems and shell programming

PC404IT	Web Programming	1. The Student is expected to gain knowledge of HTML , DHTML, client side scripting, validation of forms 2. Understanding of server side scripting and XML to parse and use XML Data
PC405IT	Distributed Systems	1.To understand Transactions and Concurrency control. 2. Ability to understand Security issues and Distributed shared memory
PE407CS	Distributed Databases	1. Identify different stages of the database development life cycle. 2.Design different data models for a database application. 3.Use the concepts of data normalization to analyze, measure and evaluate the performance of a database application
PC451IT	Unix Programming Lab	1.To understand the use of client/server architecture, inter process communication and to explain the basic communication protocols. 2.To understand elementary socket system calls, advanced socket system calls and Java Socket API and to explain the basic concepts relating to TCP and UDP based sockets. 3.To understand File transfer protocol, remote login using pseudo terminal and RPC
PC452IT ITP1	Web Programming Lab Mini Project -I	The student is able to program web applications using the following technologies HTML, Javascript ,Vb script, ASP PHP,

Year - III Semester - I

Course code	Course name	Outcome
CS801	Information Security	1.Ability to demonstrate the knowledge of cryptography and network security concepts and applications. 2. Apply security principles in system design. 3 Ability to identify and investigate vulnerabilities and security threats and mechanisms to counter them
CS802	Big Data Analytics	1.Introduce students the concept and challenge of big data (3 V's: volume, velocity, and variety). 2. teach students in applying skills and tools to manage and analyze the big data.
CS803	Object Oriented System Development	1. Will be able to use UML notations process in software development 2. Can apply unified 3. Will be able to perform analysis and design using object modeling 4.Design and develop the best test strategies in accordance to the development model.
CS805	Electronic Commerce	1.Demonstrate and understanding of the foundations and importance of E-commerce. 2. Analyze the impact of E-commerce on business models and strategy. Describe the infrastructure for E-commerce.
CS 810	Mobile Computing	1.Able to think and develop new mobile application. 2.Able to take any new technical issue related to this new paradigm and come up with a solution(s). 3.Able to develop new ad hoc network applications and/or algorithms/protocols.. 4.Able to understand & develop any existing or new protocol related to mobile environment
CS831	Programming Lab IX-	The student should take up the case study and Model it in different views i.e Use case view, logical view, component view, Deployment view, forward and Reverse Engineering, and Generation of documentation of the project..
CS832	Programming Lab X- Middleware Technologies Lab	1.Understanding the basic structure of distributed systems and motivation of using middleware. 2.Learn to make judgment in choosing a suitable middleware for application problems.and the basic concepts of Web Services and EJB.

Year - III Semester - II

Course code	Course name	Outcome
	Project seminar	Enables to apply the knowledge by practical implementation of techniques and skills on a specific concept.