J. S. UNIVERSITY, SHIKOHABAD

BACHELOR OF COMPUTER APPLICATION

(B.C.A.)

Three year Program
(Computer Science & Application)

SCHEME & SYLLABUS

[Effective from the session 2015-16]

J. S. UNIVERSITY, SHIKOHABAD

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

VISION

- To generate competent professionals to become part of the industry & research organizations at the national & international levels.
- To be in the frontier of computer science and engineering by creating the most conductive environment for quality academic and research oriented undergraduate and postgraduate education in computer science and engineering.
- To be renowned itself as a reputed organization in engineering education and research aimed towards betterment of society.

MISSION

- Creating the knowledge of fundamental principles and innovative technologies through research within the core areas of computer science and also in interdisciplinary topics.
- Empowering the youth in rural communities with computer education. Imparting moral and ethical values and interpersonal skills to the students.
- Provide exposure of latest tools and technologies in the area of engineering and technology.

PROGRAMME OUTCOMES

1. Understand, analyze and develop computer programs in the areas related to algorithm, web design and networking for efficient design of computer based system.
2. Ability to apply knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.
3. Work in the IT sector as system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.
4. Apply standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality of product for business success.
5. Ability to apply innovation to track a suitable opportunity to create value and wealth for the betterment of the individual and society at large.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - FIRST

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-11	Computer Fundamental & Office Automation	4	1	-	-	50	100	150	3
2	BCA-12	Programming Principle & Algorithm	4	1	-	-	50	100	150	3
3	BCA-13	Principle of Management	4	1	-	-	50	100	150	3
4	BCA-14	Business Communication	4	1	-	-	50	100	150	3
5	BCA-15	Mathematics –I	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
6	BCA-11P	Computer Fundamental & Office Automation Lab	-	-	4	-	20	30	50	3
7	BCA-12P	Programming Principle & Algorithm Lab	-	-	4	-	20	30	50	3
8	BCAGD-10	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - SECOND

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-21	C Programming	4	1	-	-	50	100	150	3
2	BCA-22	Digital Electronics & Computer Organization	4	1	-	-	50	100	150	3
3	BCA-23	Organization Behavior	4	1	-	-	50	100	150	3
4	BCA-24	Financial Accounting & Management	4	1	-	-	50	100	150	3
5	BCA-25	Mathematics –II	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
6	BCA-21P	C Programming Lab	-	-	4	-	20	30	50	3
7	BCA-22P	Digital Electronics & Computer Organization Lab	-	-	4	-	20	30	50	3
8	BCAGD-20	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - THIRD

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-31	Object Oriented Programming Using C++	4	1	-	-	50	100	150	3
2	BCA-32	Data Structure Using C & C++	4	1	-	-	50	100	150	3
3	BCA-33	Computer Architecture & Assembly Language	4	1	-	-	50	100	150	3
4	BCA-34	Business Economics	4	1	-	-	50	100	150	3
5	BCA-35	Elements of Statistics	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
6	BCA-31P	Object Oriented Programming Using C++ Lab	-	-	4	-	20	30	50	3
7	BCA-32P	Data Structure Using C & C++ Lab	-	-	4	-	20	30	50	3
8	BCAGD-30	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - FOURTH

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-41	Computer Graphics & Multimedia Application	4	1	-	-	50	100	150	3
2	BCA-42	Operating System	4	1	-	-	50	100	150	3
3	BCA-43	Software Engineering	4	1	-	-	50	100	150	3
4	BCA-44	Optimization Techniques	4	1	-	-	50	100	150	3
5	BCA-45	Mathematics-III	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
6	BCA-41P	Computer Graphics & Multimedia Application Lab	-	-	4	-	20	30	50	3
7	BCA-42P	Operating System Lab	-	-	4	-	20	30	50	3
8	BCAGD-40	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - FIFTH

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-51	Introduction to DBMS	4	1	-	-	50	100	150	3
2	BCA-52	Java Programming and Dynamic Webpage Design	4	1	-	-	50	100	150	3
3	BCA-53	Computer Network	4	1	-	-	50	100	150	3
4	BCA-54	Numerical Methods	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
5	BCA-51P	DBMS Lab	-	-	4	-	20	30	50	3
6	BCA-52P	Java Programming and Dynamic Webpage Design Lab	-	-	4	-	20	30	50	3
7	BCA-53P	Minor Project					50	50	100	
8	BCA-54P	Viva-Voice on Summer Training					50		50	
9	BCAGD-50	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

STUDY AND EVALUATION SCHEME FOR

B.C.A.

SEMESTER - SIXTH

S.No.	Subject Code	Name of Subject	Periods Per Week				Evaluation Scheme			
			L	T	P	D	Sessional	End Exam	Total	Duration
THEORY SUBJECT										
1	BCA-61	Computer Network Security	4	1	-	-	50	100	150	3
2	BCA-62	Information System: Analysis Design & Implementation	4	1	-	-	50	100	150	3
3	BCA-63	E-Commerce	4	1	-	-	50	100	150	3
4	BCA-64	Knowledge Management	4	1	-	-	50	100	150	3
PRACTICA/DRAWING SUBJECTS										
5	BCA-61P	Major Project	-	-	4	-	50	150	200	3
6	BCA-62P	Presentation/Seminar based on Major Project	-	-	4	-	50		50	3
7	BCAGD-60	Games//Social and Cultural Activities + Discipline (25 + 25)							50	
								Grand Total	900	

NOTE:- (1) Each period will be 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be at least 14 weeks.

(4) Remaining periods will be utilised for revision etc.

[BCA-11] Computer Fundamental & Office Automation

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember the basic terminologies used for the Computers as well as familiarize with various Number Systems.
2. Discuss the Evolution of various types of the Operating system.
3. Apply different operations of the Windows Operating Environment.
4. Illustrate the use of Spreadsheets and Database Packages.
5. Compare and Co-relate different algorithms and flowcharts.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	2	1	-
CO-2	2	2	1	2	1
CO-3	3	2	1	2	1
CO-4	2	2	2	1	2
CO-5	3	2	-	-	-

UNIT-I

Introduction to Computers

Introduction, Characteristics of Computers, Block diagram of computer.Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers.Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages). Data Organization, Drives, Files, Directories. Types of Memory (Primary And Secondary) RAM, ROM, PROM, EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive) I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems Introduction to Binary, Octal, Hexadecimal system Conversion, Simple Addition, Subtraction, Multiplication.

UNIT-II

Algorithm and Flowcharts

Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages,Examples.

UNIT-III

Operating System and Services in O.S.

Dos – History, Files and Directories, Internal and External Commands, Batch Files, Types of O.S.

UNIT-IV

Windows Operating Environment

Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.

UNIT-V

Editors and Word Processors

Basic Concepts, Examples: MS-Word, Introduction to desktop publishing.

UNIT-VI

Spreadsheets and Database packages

Purpose, usage, command, MS-Excel, Creation of files in MS-Access, Switching between application, MS-PowerPoint.

Referential Books:

1. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
2. Fundamental of Computers – By P.K. Sinha
3. Computer Today- By Suresh Basandra
4. Unix Concepts and Application – By Sumitabha Das
5. MS-Office 2000(For Windows) – By Steve Sagman
6. Computer Networks – By Tennenbum Tata MacGrow Hill Publication

[BCA-12] Programming Principle & Algorithm

Course outcome:-

After Completion of this course, the students will be able to:

1. Understand the basic concepts of Programming.
2. Develop conditional and iterative statements for writing programs.
3. Compare different problem solving techniques.
4. Apply various problem solving techniques and become proficient in problem solving.
5. Analyze the given problems and design Algorithms and Flowcharts for the given problems.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	3	1	1	1
CO-2	3	2	1	2	2
CO-3	3	2	2	1	1
CO-4	2	2	-	2	1
CO-5	3	3	1	-	2

UNIT-I

Introduction to 'C' Language

History, Structures of 'C' Programming, Function as building blocks.

Language Fundamentals

Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments.

UNIT-II

Operators

Types of operators, Precedence and Associativity, Expression, Statement and types of statements.

Build in Operators and function

Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files, Preprocessor directives: #include, #define.

UNIT-III

Control structures

Decision making structures: If, If-else, Nested If-else, Switch; Loop Control structures: While, Do-while, for, Nested for loop; Other statements: break, continue, goto, exit.

UNIT-IV

Introduction to problem solving

Concept: problem solving, Problem solving techniques (Trail & Error, Brain Stroming, Divide & Conquer) Steps in problem solving (Define Problem, Analyze Problem, Explore Solution) Algorithms and Flowcharts (Definitions, Symbols), Characteristics of an algorithm Conditionals in pseudo-code, Loops in pseudo code

Time complexity: Big-Oh notation, efficiency Simple Examples: Algorithms and flowcharts (Real Life Examples).

UNIT-V

Simple Arithmetic Problems

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

UNIT-VI

Functions

Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variable, Storage classes, Recursion.

Referential Books :

1. Let us C-YashwantKanetkar.

2. Programming in C-Balguruswamy

3. The C programming Lang., Pearson Ecl - Dennis Ritchie

4. Structured programming approach using C- Forouzah&Ceilber Thomson learning publication.

5. Pointers in C – YashwantKanetkar

6. How to solve it by Computer – R.G. Dromy Peter Norton's Introduction to Computers – Tata McGHill

[BCA-13] Principle of Management

Course Outcome:-

On completion of this course, the students will be able to

CO1: Understand the concepts related to Business.

CO2: Demonstrate the roles, skills and functions of management.

CO3: Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

CO4: Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.

CO-PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	-	2	1	2	3
CO-2	-	2	1	2	3
CO-3	-	2	1	2	3
CO-4	-	2	1	2	3

UNIT-I

Nature of Management:

Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession-Management as social System Concepts of management-Administration-Organization, Management Skills, Levels of Management.

UNIT-II

Evolution of Management Thought:

Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, ChesterBarhard& Peter Drucker to the management thought. Business Ethics & Social Responsibility: Concept, Shift to Ethics, Tools of Ethics.

UNIT-III

Functions of Management: Part-I

Planning – Meaning- Need & Importance, types, Process of Planning, Barriers to Effective Planning, levels – advantages & limitations. Forecasting- Need & Techniques. Decision making-Types - Process of rational decision making & techniques of decision making Organizing – Elements of organizing & processes: Types of organizations, Delegation of authority – Need, difficulties. Delegation – Decentralization. Staffing – Meaning & Importance Direction – Nature – Principles

Communication – Types & Importance.

UNIT-IV

Functions of Management: Part-II

Motivation – Importance – theories

Leadership – Meaning – styles, qualities & function of leader

Controlling – Need, Nature, importance, Process & Techniques, Total Quality Management Coordination – Need – Importance.

UNIT – V

Management of Change: Models for Change, Force for Change, Need for Change, Alternative Change Techniques, New Trends in Organization Change, Stress Management.

UNIT-VI

Strategic Management

Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India

Referential Books :

1. Essential of Management – Horold Koontz and IteinzWeibrich- McGrawhills International.
2. Management Theory & Practice – J.N.Chandan.
3. Essential of Business Administration – K.Aswathapa, Himalaya Publishing House.
4. Principles & practice of management – Dr.L.M.Parasad, Sultan Chand & Sons – New Delhi.
5. Business Organization & Management – Dr.Y.K.Bhushan
6. Management: Concept and Strategies By J.S. Chandan, Vikas Publishing
7. Principles of Management, By Tripathi, Reddy Tata McGraw Hill

[BCA-14] Business Communication

Course Outcomes

On completion of this course, the students will be able to

CO1. To be familiar with the complete course outline/Course Objectives/Learning Outcomes/ Evaluation Pattern & Assignments

CO2. To participate in an online learning environment successfully by developing the implication-based understanding of Paraphrasing, deciphering instructions, interpreting guidelines, discussion boards & Referencing Styles.

CO3. To demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary & Grammar.

CO4. To distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.

CO5. To draft effective business correspondence with brevity and clarity.

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	2	2	1	-	2
CO-2	3	2	1	3	1
CO-3	1	2	1	-	3
CO-4	-	2	1	2	2

UNIT-I

Means of Communication:

Meaning and Definition – Process – Functions – Objectives – Importance – Essentials of good communication – Communication barriers, 7C's of Communication.

UNIT-II

Types of Communication: Oral Communication:

Meaning, nature and scope – Principle of effective oral communication – Techniques of effective speech – Media of oral communication (Face -to-face conversation – Teleconferences – Press Conference – Demonstration – Radio Recording – Dictaphone – Meetings – Rumour – Demonstration and Dramatisation – Public address system – Grapevine – Group Discussion – Oral report – Closed circuit TV). The art of listening – Principles of good listening.

UNIT-III

Written Communication

Purpose of writing, Clarity in Writing, Principle of Effective writing, Writing Techniques, Electronic Writing Process.

UNIT-IV

Business Letters & Reports:

Need and functions of business letters – Planning & layout of business letter – Kinds of business letters – Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports.

UNIT-V

Drafting of business letters:

Enquiries and replies – Placing and fulfilling orders – Complaints and follow-up Sales letters – Circular letters Application for employment and resume.

UNIT-VI

Information Technology for Communication:

Word Processor – Telex – Facsimile(Fax) – E-mail – Voice mail –Internet – Multimedia – Teleconferencing – Mobile Phone Conversation – Video Conferencing –SMS – Telephone Answering Machine – Advantages and limitations of these types.

Topics Prescribed for workshop/skill lab

Group Discussion, Mock Interview, Decision Making in a Group.

Referential Books :

1. Business Communication – K.K.Sinha – Galgotia Publishing Company, New Delhi.

2. Media and Communication Management – C.S. Rayudu – Hikalaya Publishing House, Bombay.

3. Essentials of Business Communication – Rajendra Pal and J.S. Korlhalli- Sultan Chand & Sons, New Delhi.

4. Business Communication (Principles, Methods and Techniques) Nirmal Singh – Deep &Deep Publications Pvt. Ltd., New Delhi.

5. Business Communication – Dr.S.V.Kadvekar, Prin.Dr.C.N.Rawal and Prof.RavindraKothavade- Diamond Publications, Pune.

[BCA-15] Mathematics –I

Course Outcome:-

Upon successful completion of the course, a student will be able to:

- Master the basic set theory.
- Familiar with propositional calculus.
- Know about Graphs and algorithms.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	2	2	2	1	2
CO-2	3	3	1	2	1
CO-3	3	2	-	-	1

UNIT-I

DETERMINANTS:Definition, Minors, Cofactors, Properties of Determinants

MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors,Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT-II

LIMITS & CONTINUITY:Limit at a Point, Properties of Limit, Computation of Limits of VariousTypes ofFunctions,Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities.

UNIT-III

DIFFERENTIATION:Derivative, Derivatives of Sum, Differences, Product & Quotients, ChainRule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule,Maxima& Minima, Successive Differentiation &Liebnitz Theorem.

UNIT-IV

INTEGRATION:Integral as Limit of Sum, Fundamental Theorem of Calculus(without proof.),Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).

UNIT-V

VECTOR ALGEBRA:Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar andVector Product and physical interpretation of area and volume.

[BCA-11P] Computer Fundamental & Office Automation LAB

FORMAT OF THE LAB RECORDS TO BE PREPARED BY THE STUDENTS

Course outcomes-

1. Makes students gain a broad perspective about the uses of computers in engineering industry.
2. Develops basic understanding of computers, the concept of algorithm and algorithmic thinking.
3. Develops the ability to analyze a problem, develop an algorithm to solve it.
4. Develops the use of the C programming language to implement various algorithms, and develops the basic concepts and terminology of programming in general.
5. Performing basic editing functions, formatting text, copy and moving objects and text.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	2	2	2	1	2
CO-2	3	3	1	2	1
CO-3	3	2	-	-	1
CO-4	1	2	2	-	-
CO-5	2	-	1	2	1

The student are required to maintain the lab records as per the instruction :

1. All the record files should have a cover page as per the format.

2.All the record files should have an index as per the format

3.All the records should have the following:

- Date
- Aim
- Algorithm or the Procedure to be followed.
- Program
- Output
- Viva questions after each section of programs.

1. How A Computer System Works?

Hardware Configuration, Introduction to Basic Components of a Typical PC, Assembling a PC, Installing Operating System, Basic Troubleshooting During the Assembling, Basic Troubleshooting of PC, Introduction to Various Types of Cables and Connectors used in Networking, Introduction to Networking and NetworkingConcepts, Repeaters, Hubs, Switches, Bridges, Routers, Hubs vs Switches, Installing the NIC Card, MAC Address.

Write practical use of following DOS Commands : • copy con • dir • cd • Edit • Scandisk • format 2. Do following activities using Dos commands : • Copy all files from C directory into D Directory • Rename File abc to xyz • Delete file xyz.

2.Ms Office XP/2007

(A) Ms Word Introduction to Ms Word: Menu Bar, Menus, Submenus, Tool Bar, Tools, Customizing Toolbar, Hiding Toolbar etc., Creating and Saving a Documents, Working with an Existing Document, Auto Text, Auto Complete and Auto Correct.

(B) Formatting a Document : Change the Appearance of Text & Paragraph, Copy, Paste and Paste Special Functions, Creating and Modifying a List, Change the Way Each Page Appears in the Document Giving Stress to Line and Page Break Options and Orientation, Changing the Look of Documents with Styles.

(C) NUsing Tables and Columns: Table Creation and Modification Giving Stress to Auto-Fit, Auto-Format and Table Sort. Working with Data in Table Giving Stress to Formulas, Presenting Text in Columns, Object Linking and Embedding, Inserting and Sizing Graphics, Hyperlink Envelopes & Label Creation, Grammar & Spell Check, Previewing and Printing Documents.

3.Excel

Introduction to Electronic Spreadsheet and Microsoft Excel : Creating and Formatting a Worksheet, Features of Excel, Inserting and Formatting Data in a Worksheet, Working with an Existing Data List, Auto Fill, Fill Series and Autocomplete Options, Formatting Cells; Sorting & Filtering Data, Conditional Formatting, Formulas and Functions (Details Usage of Important Data Functions Like Sum, If, Average etc.); Interlinking Worksheets and Files, Setting Filters and Performing Calculations on Filtered Data etc.

4.MS Power Point

Introduction to Power Point:

Creating A Presentation: Features of Power Point - Editing Master Slides, Viewing and Editing a Presentation, Inserting, Sorting, Hiding and Deleting Slides, Inserting Pictures.

Clip Art and Movies in a Slide: Creating and Enhancing a Table, Slide Layouts, Modifying the Slides and Title Master, Adding Transition and Animation Effect, Hyper Linking Slides & Files.

[BCA-12P] Programming Principle & Algorithm LAB

FORMAT OF THE LAB RECORDS TO BE PREPARED BY THE STUDENTS

Course outcomes-

1.Illustrate basic concepts of Computer and C programming.

2. Design the solution for the given problems and develop the same using C programming language.

3. Apply the concepts of looping, branching, and decision-making statements for a given problem.

4. Demonstrate the ability to write C programs using pointers, structures, unions and arrays.

5. Develop modular applications using C programming language.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	1	3	2	2
CO-2	-	2	2	3	-
CO-3	3	-	1	1	1
CO-4	2	3	-	-	-
CO-5	2	-	-	2	-

The student are required to maintain the lab records as per the instruction :

1.All the record files should have a cover page as per the format.

2. All the record files should have an index as per the format

3.All the records should have the following:

- Date
- Aim

- Algorithm or the Procedure to be followed.
- Program
- Output
- Viva questions after each section of programs.

Lists of Practical-

1. WAP to calculate area of the circle.
2. WAP to implement swapping of two variable .
3. WAP to find greatest among three numbers.
4. WAP to Find the number is palindrome or not.
5. Loop Control Structure WAP to find the factorial of a given number by using for loop and while loop.
6. WAP to call a function by reference and call a function by value.

7. Write a C program , algorithm and flowchart to print the number entered by user only if the numberentered is negative.
8. Write a C program to check whether a number entered by user is even or odd using if-else.
9. Write a C program to relate two integers entered by user using = or > or < sign using nested if.
10. Write a C program to add all the numbers entered by a user until user enters 0 using do-while loop.
11. Write a C program to find average of maximum of *n* positive numbers entered by user. But, if the input is negative, display the average (excluding the average of negative input) and end the program using break statement.
12. Write a C program to find the product of 4 integers entered by a user. If user enters 0 skip it using continue statement .
13. Write a program that asks user an arithmetic operator('+','-','*' or '/') and two operands and perform the corresponding calculation on the operands using switch .
14. Write short notes on-

1.What is An algoritm 2.What is flowchart 3.What is pseudo code 4.Define order of growth 5.Define divide and conquer algorithm

[BCA-21]C Programming

Course Outcome:-

Upon completion of this course, students will be able to:

- Learn how to build by the algorithms for problems.
- Learn how to create pictorial representations of the program.
- Learn how to apply logic for problems.
- Enhance their programming skills.
- Learn about Loops, Conditional statements, Array, Pointers, File Handling, Structure, Unions etc.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	1	2
CO-2	3	2	2	2	1
CO-3	1	2	2	1	3
CO-4	3	1		2	2
CO-5	3	3	2	3	3

UNIT-I

Arrays

Definition, declaration and initialization of one dimensional array; Accessing array elements; Displaying array elements; Sorting arrays; Arrays and function; Two-Dimensional array: Declaration and Initialization, Accessing and Displaying, Memory representation of array [Row Major, Column Major]; Multidimensional array.

UNIT-II

Pointers

Definition and declaration, Initialization; Indirection operator, address of operator; pointer arithmetic; dynamic memory allocation; arrays and pointers; function and pointers.

UNIT-III

Strings

Definition, declaration and initialization of strings; standard library function: strlen(), strcpy(), strcat(), strcmp(); Implementation without using standard library functions.

UNIT-IV

Structures

Definition and declaration; Variables initialization; Accessing fields and structure operations; Nested structures; Union: Definition and declaration; Differentiate between Union and structure.

UNIT-V

Introduction C Preprocessor

Definition of Preprocessor; Macro substitution directives; File inclusion directives; Conditional compilation. Bitwise operators; Shift operators; Masks; Bit field.

UNIT-VI File handling

Definition of Files, Opening modes of files; Standard function: fopen(), fclose(), feof(), fseek(), fewind();Using text files: fgetc(), fputc(), fscanf().

Command line arguments

Referential Books:

1. Let us C-YashwantKanetkar.

2. Programming in C-Balguruswamy

3. The C programming Lang., Person Ecl – Dennis Ritchie

4. Structured programming approach using C-Forouzah&Ceilberg Thomson learning publication.

[BCA-22]Digital Electronics & Computer Organization

Course Outcome:-

Upon completion of this course, students will be able to:

- Understand about concepts of Computer Organization and design.
- Understand and implement Instruction codes and op-codes.
- Understand Registers, Computer Instructions, timing and control.
- Understand CPU basics, Stack Organization, Instruction format, Addressing formats.
- Understand Memory system of a Computer.
- Understand basics of 8-bit Microprocessor.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	2	2	-
CO-2	2	3	-	2	2
CO-3	1	2	1	1	-
CO-4	1	2	2	2	2
CO-5	2	-	1	1	1
CO-6	-	2	-	2	-

UNIT-I

Logic gates and circuit

Gates (OR, AND, NOR, NAND, XOR & XNOR); Demorgan's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Map).

UNIT-II

Combinational Building Blocks

Multiplexes; Decoder; Encoder; Adder and Subtracter.

UNIT-III

Memories

ROMs, PROMs, EPROMs, RAMs, Hard Disk, Floppy Disk and CD-ROM.

UNIT-IV

Sequential Building Blocks

Flip-Flop (RS, D, JK, Master-slave && T flip-flops); Registers & Shift registers; Counters; Synchronous and Asynchronous Designing method.

UNIT-V

Memory Organization: Basic cell of static and dynamic RAM; Building large memories using chips; Associative memory; Cache memory organization and Virtual memory organization.

Referential Books:

1. Digital Logic and Computerdesign (PHI) 1998 : M.M. Mano
2. Computer Architecture (PHI)1998 : M.M. Mano
3. Digital Electronics (TMH) 1998 : Malvino and Leach
4. Computer Organization and Architecture : William Stallings
5. Digital fundamentals (Universal Book Stall) 1998: Floyd, L.Thomas
6. Computer Organization (MC Graw-Hill, Signapore) : Hamcher, Vranesic and Zaky

[BCA-23]Organization Behaviour

Course Outcome:-

- To discuss the development of the field of organizational behaviour and explain the micro and macro approaches.
- To analyze and compare different models used to explain individual behaviour related to motivation and rewards
- To identify the processes used in developing communication and resolving conflicts
- To explain group dynamics and demonstrate skills required for working in groups (team building)
- To identify the various leadership styles and the role of leaders in a decision making process.

CO-PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	1	2	2	1
CO2	3	3	1	2	2
CO3	3	3	1	1	1
CO4	3	3	1	1	3
CO5	3	3	1	1	3

UNIT-I

Fundamentals of Organizational Behaviour

Nature, Scope, Definition and Goals of Organizational Behaviour; Fundamental Concepts of Organizational Behaviour; Models of Organizational Behaviour; Emerging aspects of Organizational Behaviour: Meaning Cultural Diversity, Managing the Perception Process.

UNIT-II

Perception, Attitude, Values and Motivation

Concept, Nature, Process, Importance, Management Behavioural aspect of Perception. Effects of employee attitudes; Personal and Organizational Values; Job Satisfaction; Nature and Importance of Motivation; Achievement Motive; Theories of Work Motivation: Maslow's Need Hierarchy Theory McGregcrs's Theory 'X' and Theory 'Y'.

UNIT-III

Personality

Definition of Personality, Determinants of Personality; Theories of Personality- Trait and Type Theories, The Big Five Traites, Mytes-Briggs Indicator; Locus of Control, SType A and Type B Assessment of Personality.

UNIT-IV Work Stress

Meaning and definition of Stress, Symptoms of Stress; Sources of Stress: Individual Level, Group Level, Organizational Level; Stressors, Extra Organizational Stressors; Effect of Stress – Burnouts; Stress Management – Individual Strategies, Organizational Strategies; Employee Counselling.

UNIT-V

Group Behaviour and Leadership

Nature of Group, Types of Groups; Nature and Characteristics of team; Team Building, Effective Teamwork; Nature of Leadership, Leadership Styles; Traits of Effective Leaders.

UNIT-VI

Conflict in Organizations

Nature of Conflict, Process of Conflict; Levels of Conflict – Intrapersonal, Interpersonal; Sources of Conflict; Effect of Conflict; Conflict Resolution, Meaning and types of Grievances & Process of Grievances Handling.

Referential Books:

1. Organizational Behavior Text, Cases and Games- By K.Aswathappa, Himalaya Publishing House, Mumbai, Sixth Edition (2005)

2. Organizational Behavior Human Behavior at Work By J.W. Newstrom, Tata McGraw Hill Publishing Company Limited, New Delhi, 12th Edition (2007)

3. Organizational Behavior – By Fred Luthans

4. Organizational Behavior – By Super Robbins

5. Organizational Behavior – Anjali Ghanekar

6. Organizational Behavior Fundamentals, Realities and Challenges ByDetra Nelson, James Campbel Quick Thomson Publications

7. Organizational Behavior through Indian Philosophy, By N.M.Mishra, Hikalaya Publication House

[BCA-24]Financial Accounting & Management

Course Outcome:-

- Learners understand the dissolution of firms
- Got the knowledge of the piecemeal distribution of cash for settlement of liabilities
- Understanding conversion of a firm into a ltd company
- Learners learned to maintain accounts in the books of purchasing firm
- Helps to understand the application of rate for foreign currency into reporting
  Understand the concept of management accounting

CO-PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	-	3	-	3	2
CO-2	-	3	-	2	2
CO-3	-	3	3	2	2
CO-4	-	3	3	2	2
CO-5	-	3	-	1	2

UNIT-I

Overview - Meaning and Nature of Financial Accounting, Scope of Financial Accounting, Financial Accounting & Management Accounting, Accounting concepts & convention, Accounting standards in India.

UNIT-II

Basics of accounting – Capital & Revenue items, Application of Computer in Accounting Double Entry System, Introduction to Journal, Ledger and Procedure for Recording and Posting, Introduction to Trail Balance, Preparation of Final Account, Profit & Loss Account and related concepts, Balance Sheet and related concept.

UNIT-III

Financial statement analysis: Ratio analysis, Funds flow analysis, concepts, uses, Preparation of funds flow statement, simple problem, Cash flow analysis, Concepts, uses, preparation of cash flow statement, simple problem, Break – even analysis.

UNIT-IV

Definition nature and Objective of Financial Management, Long Term Sources of Finance, Introductory idea about capitalization, Capital Structure, Concept of Cost of Capital, introduction, importance, explicit & implicit cost, Measurement of cost of capital, cost of debt.

UNIT-V

Concept & Components of working Capital. Factors Influencing the Composition of working Capital, Objectives of working Capital Management – Liquidity Vs. Profitability and working capital policies. Theory of working capital: Nature and concepts.

UNIT-VI

Cash Management, Inventory Management and Receivables Management.

Referential Books:

1. Maheshwari&Maheshwari, "An Introduction to Accountancy", 8th Edition, Vikas Publishing House, 2003

2. Gupta R.L., Gupta V.K., "Principles & Practice of Accountancy", Sultan Chand & Sons, 1999.

3. Khan & Jain, "Financial Accounting"

4. Maheshwari S.N., "Principles of Management Accounting", 11th Edition, Sultan Chand & Sons, 2001.

5. Shukla and Grewal, "Advanced Accounts", 14th Edition, Sultan Chand & Sons.

[BCA-25]Mathematics –II

Course Outcome:-

- To understand the basics concepts of Discrete Mathematical Structures.
- To get the Knowledge about sets, relations and functions.
- To study the basics of lattices and graphs.
- To get familiar with propositional logic.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	1	2
CO-2	3	2	2	2	2
CO-3	2	1	2	2	2
CO-4	3	2	3	1	2
CO-5	3	3	2	3	3

UNIT-I

SETS

Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection and Complements of Sets, Cartesian Product, Cardinality of Set.

UNIT-II

RELATIONS AND FUNCTIONS

Properties of Relations, Equivalence Relation, Partial Order Relation Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions, Introduction of Trigonometric, Logarithmic and Exponential Functions.

UNIT-III

FUNCTIONS OF SEVERAL VARIABLES

Partial Differentiation, Change of Variables, Chain Rule, Extrema of Functions of Two Variables, Euler's Theorem.

UNIT-IV

3D COORDINATE GEOMETRY

3D Coordinate Geometry: Coordinates in Space, Direction Cosines, Angle Between Two Lines, Projection of Join of Two Points on a Plane, Equations of Plane, Straight Lines, Conditions for a line to lie on a plane, Conditions for Two Lines to be Coplanar, Shortest Distance Between Two Lines.

UNIT-V

MULTIPLE INTEGRATION

Double Integral in Cartesian and Polar Coordinates to find Area, Change of Order of Integration, Triple Integral to Find Volume of Simple Shapes in Cartesian Coordinates.

[BCA-21P]C Programming Lab

Course Outcome:-

1. Develop a C program.
2. Control the sequence of the program and give logical outputs.
3. Implement strings in your C program.
4. Store different data types in the same memory.
5. Manage I/O operations in your C program.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	2	2	1	1	-
CO-2	1	1	2	3	2
CO-3	-	-	-	-	-
CO-4	3	-	3	1	2
CO-5	-	2	-	2	-

1. WAP to copy string1 to string2 and compare to string3 and find out the length of string2. And concatenate string2 to string3.

2. C Program to Create a File & Store Information 3.C

Program to Illustrate Reading of Data from a File

4.C Program to Append the Content of File at the end of Another

5.C Program that Merges Lines Alternatively from 2 Files & Print Result6.C

Program to List Files in Directory

7.C Program to Find Sum of Numbers given in Command Line Arguments Recursively
8.C Program to Display the Function Names defined in C Source File
9.C Program to Find the Size of File using File Handling Function10.C

Program to Capitalize First Letter of every Word in a File 11.C Program

to Print Environment Variables

12.C Program to Copy File into Another File

13.C Program to Create Employee Record and Update it

14.C Program to Compare two Binary Files, Printing the First Byte Position where they Differ

15.C program Delete a specific line from a Text File.

[BCA-22P]Digital Electronics & Computer Organization Lab

COURSE OUTCOME-

1. Know the characteristics of various components.
2. Understand the utilization of components.
3. Design and analyze small signal amplifier circuits.
4. Explains the basics of instructions sets and their impact on processor design.
5. Demonstrate an understanding of the design of the functional units of a digital computer system.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	-	1	3
CO-2	1	-	3	2	1
CO-3	2	3	2	3	2
CO-4	-	-	1	-	-
CO-5	1	1	2	1	-

1. To study and understand nomenclature, pin configuration, and data sheets of 74 series TTL ICs.
2. To verify and interpret truth tables for AND, OR, NOT, NAND, NOR Exclusive OR and Exclusive NOR Gates.
3. To realize a given logic functions with the help of universal gate-NAND & NOR Gate.
4. To realize an XOR and XNOR gate usingminimum number of NAND gates.
5. To design and implement Half Adder and HalfSubtractor using logic gates.
6. To design and implement Full Adder and FullSubtractor using logic gates
7. To design and implement 4- bit binary Adder/Subtractor . Using IC 7483
8. To design and implement BCD adder usingIC 7483
9. To design and implement BCD to excess-3(and vice versa) code converters using logicgates.
10. To design and implement Binary to gray (andvice versa code converters) using logic gates.
11. To design and implement 4 to 2 encoder usinglogic gates.
12. To design and implement 3 to 8 decoder using logic gate.
13. To design and implement 4:1 Multiplexer using logic gates.
14. To design and implement 1:4 De-multiplexerusing logic gates
15. To design and implement 4-bit SISO, SIPO,PISO and PIPO shift registers using Flip- flops.
16. To design and implement8- bit Shift left/shift right register using flip-flops

Object Oriented Programming Using C++

Course outcome:-

Understand fundamental constructs of OOP.

- Get the knowledge of different forms of OOP Implementation.
- To demonstrate the differences between traditional imperative design and object- oriented design.
- To understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	3	2	2	2
CO-2	3	3	2	2	2
CO-3	2	2	2	2	3

UNIT-I

Introduction

Introducing Object – Oriented Approach, Relating to other paradigms {Functional, Data decomposition}.

Basic terms and ideas

Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ - cin, cout, new, delete, operators.

UNIT-II

Classes and Objects

Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, State idendity and behaviour of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Metaclass / abstract classes.

UNIT-III

Inheritance and Polymorphism

Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition vs classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parameteric Polymorphism

UNIT-IV Generic function

Template function, function name overloading, Overriding inheritance methods, Run time polymorphism, Multiple Inheritance.

UNIT-V

Files and Exception Handling

Streams and files, Namespaces, Exception handling, Generic Classes

Referential Books:

1. A.R.Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997**.**

2. S.B.Lippman & J.Lajoie, " C++ Primer", 3rd Edition, Addison Wesley, 2000.The C programming Lang., Person Ecl – Dennis Ritchie

Data Structure Using C & C++

Course outcome:-

- To be able to practically implement the data structures like stack, queue, array etc.

• To understand and implement different searching and sorting.
• Understand the need for Data Structures when building Applications.
• Able to walk through insert and delete for different data techniques.
• Improve programming skills.

CO-PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	2	2	2
CO-2	1	3	2	2	1
CO-3	3	1	2	2	3
CO-4	3	2	1	2	1
CO-5	3	3	2	2	2

UNIT-I

Introduction to Data Structure and its Characteristics Array

Representation of single and multidimensional arrays; Sprase arrays – lower and upper triangular matrices and Tridiagonal matrices with Vector Representation also.

UNIT-II

Stacks and Queues

Introduction and primitive operations on stack; Stack application; Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion between prefix, infix and postfix, introduction and primitive operation on queues, D-queues and priority queues.

UNIT-III

Lists

Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion searching, Two way lists and Use of headers

UNIT-IV

Trees

Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion; Binary Search Tree

UNIT-V

B-Trees

Introduction, The invention of B-Tree; Statement of the problem; Indexing with binary search trees; a better approach to tree indexes; B-Trees; working up from the bottom; Example for creating a B-Tree.

UNIT-VI

Sorting Techniques; Insertion sort, selection sort, merge sort, heap sort, searching Techniques: linear search, binary search and hashing

Referential Books:

1. E.Horowiz and S.Sahani, " Fundamentals of Data structures", Galgotia Book source Pvt. Ltd., 2003

2. R.S.Salaria, " Data Structures & Algorithms" , Khanna Book Publishing Co. (P) Ltd..,2002

3. Y.Langsam et. Al., " Data Structures using C and C++" , PHI, 1999

Computer Architecture & Assembly Language

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember the concepts of Basic Computer Organization and design.
2. Apply the Arithmetic Algorithms with their Procedural implementation in Computer Architecture.
3. Compare the Input and Output Organization of different Microprocessors.
4. Evaluate different Microprocessors and their Architectural Interface.
5. Understand the Assembly Language Programming for 8085 Microprocessor.

CO-PO MAPPING

CO/PO	POI	PO2	PO3	PO4	PO5
CO1	2	1		1	
CO2	1		2	2	1
CO3		1	2	1	1
CO4	1		1	2	1
CO5		2	3	1	

UNIT-I

Basic computer organization and design, Instructions and instruction codes, Timing and control/ instruction cycle, Register/ Types of register/ general purpose & special purpose registers/ index registers, Register transfer and micro operations/ register transfer instructions, Memory and memory function, Bus/ Data transfer instructions, Arithmetic logic micro-operations/ shift micro-operations, Input/ Output and interrupts, Memory reference instructions, Memory interfacing memory/ Cache memory.

UNIT-II

Central Processing Unit

General Register Organization/ stacks organizations instruction formats, addressing modes, Data transfer and manipulation. Program control reduced computer, pipeline/ RISC/ CISC pipeline vector processing/ array processing. Arithmetic Algorithms: Integer multiplication using shift and add, Booth's algorithm, Integer division, Floating-point representations.

UNIT-III

Computer Arithmetic

Addition, subtraction and multiplication algorithms, divisor algorithms. Floating point, arithmetic operations, decimal arithmetic operations, decimal arithmetic operations.

UNIT-IV

Input – Output Organization

Peripheral devices, Input/output interface, ALU Asynchronous Data transfer, mode of transfer, priority interrupts, Direct memory Address (DMA), Input/ Output processor (IOP), serial communication.

UNIT-V

Evaluation of Microprocessor

Overview of Intel 8085 to Intel Pentium processors Basic microprocessors, architecture and interface, internal architecture, external architecture memory and input/ output interface.

UNIT-VI

Assembly language, Assembler, Assembly level instructions, macro, use of macros in I/C instructions, program loops, programming arithmetic and logic subroutines, Input-Output programming.

Referential Books:

1. Leventhal, L.A, "Introduction to Microprocessors", Prentice Hall of India

2. Mathur, A.P., "Introduction to Microprocessors" , Tata McGraw Hill

3. Rao,P.V.S., "Prospective in Computer Architechture" , Prentice Hall of India

Business Economics

Course outcome:-

After Completion of this course, the students will be able to:

1. Analyze the significance of scarce resources and its prudent utilization.
2. Understand the price-mechanism and its impact on the overall demand-supply situation.
3. Define different types of markets, and related market forces determining profitability of firms.
4. Develop the basic concepts regarding wide range of macro-economic components governing national economy.
5. Relate the studied economic theories and practices with economic events happening around in reality.
6. Apply Economic concepts in handling real world problems.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	**1**	**2**	**3**	**3**	**3**
CO2	**1**	**1**	**2**	3	**3**
CO3	**1**	**1**	**2**	3	**3**
CO4	**1**	**1**	**2**	3	**3**
CO5	**1**	**1**	**2**	3	**3**
CO6	**1**	**1**	**2**	3	**3**

UNIT-I

The Scope and Method of Economics, the Economic Problem: Scarity & Choice, The Price Mechanism, Demand & Supply Equilibrium: The Concept of Elasticity and it's Applications.

The Production Process: output decisions – Revenues Costs and Profit Maximisation **Laws of returns & Returns to Scale:** Economics and Diseconomies of scale.

UNIT-II

Market Structure: Equilibrium of a firm and Price, Output Determination under Perfect Competition Monopoly, Monoplastic Competition & Oligopoly

UNIT-III

Macro Economic Concerns

Inflalation, Unemployment, Trade-Cycles, Circular Flow upto Four Sector Economy, Government in the Macro Economy: Fiscal Policy, Monetary Policy, Measuring national Income and Output

UNIT-IV

The World Economy – WTO, Globalisation, MNC's, Outsourcing, Foreign Capital in India, Trips, Groups of Twenty (G-20), Issues of dumping, Export-Import Policy 2004-2009

Referential Books:

1. Ahuja H.L., "Business Economics",S.Chand & Co., New Delhi, 2001
2. Ferfuson P.R., Rothchild, R and Fergusen G.J."Business Economics" Mac-millan, Hampshire, 1993
3. Karl E.Case & Ray C. fair , "Principles of Economics" , Pearson Education , Asia, 2000
4. Nellis, Joseph, Parker David, " The Essence of Business Economics",Prentice Hall, New Delhi, 1992.

Elements of Statistics

Course outcome:-

After Completion of this course, the students will be able to:

1. Understand the basic knowledge of Statistics including the Types of Sample and Arrangement of Data by classification.
2. Apply the Concept and Types of Different Measures of Central Tendency in solving real life problems.
3. Classify different Measures of Variation and discuss their uses.
4. Develop the fundamental concepts of Permutation and Combination
5. Define an Experiment, Event and the Basics of Probability.
6. Analyze the Basics and Significance of Quality Control and Different types of Charts for measuring the Control Limits.

CO/PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	**2**	**2**	**3**	**3**	**3**
CO2	**1**	**3**	**2**	2	**2**
CO3	**3**	**1**	**2**	2	**-**
CO4	**2**	**-**	**-**	-	**3**
CO5	**1**	**1**	**2**	3	**1**
CO6	**3**	**3**	**-**	1	**2**

UNIT-I

Population, Sample and Data Condensation

Definition and scope of statistics, concept of population and simple with Illustration, Raw data, attributes and variables, classification, frequency distribution, Cumulative frequency distribution.

UNIT-II

Measures of Central Tendency

Concept of central Tendency, requirements of a good measures of central tendency, Arithmetic mean, Median, Mode, Harmonic Mean, Geometric mean for grouped and ungrouped data.

UNIT-III

Measures of Dispersion:

Concept of dispersion, Absolute and relative measure of dispersion, range variance, Standard deviation, Coefficient of variation.

UNIT-IV

Permutations and Combinations

Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetitions). nPr = n!/(n-r) !(without proof). Combinations of 'r' objects taken from 'n' objects. nCr = n!/(r!(n-r)!) (without proof) . Simple examples, Applications.

UNIT-V

Sample space, Events and Probability

Experiments and random experiments, Ideas of deterministic and non-deterministic experiments; Definition of sample space, discrete sample space, events; Types of events, Union and intersections of two or more events, mutually exclusive events, Complementary event, Exhaustive event; Simple examples.

Classical definition of probability, Addition theorem of probability without Proof (upto three events are expected). Definition of conditional probability Definition of independence of two events, simple numerical problems.

UNIT-VI

Statistical Quality Control

Introduction, control limits, specification limits, tolerance limits, process and product control; Control charts for X and R; Control charts for number of defective {n-p chart}, control charts for number of defects {c - chart}

Referential Books:

1. S.C.Gupta - Fundamentals of statistics - Sultan chand & sons, Delhi.

2. D.N.Elhance - Fundamentals of statistics - Kitab Mahal, Allahabad.

3. Montogomery D.C. – Statistical Quality Control - John Welly and Sons

Computer Laboratory and Practical Work of OOPS

Practical will be based on Paper Object Oriented Programming:
Covers UNIT-II, UNIT-III, UNIT-IV, UNIT-V of Syllabus

Computer Laboratory and Practical Work of DS

Practical will be based on Paper Data Structure:
Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus

Computer Graphics & Multimedia Application

Course outcome:-

After Completion of this course, the students will be able to:

1. Define Computer Graphics and understand the Primitive Graphics Functions.
2. Formulate the Coordinate Geometry Equations in Computer Graphics.
3. Understand the concept and Application of Computer Graphics Algorithms in Procedural and Object Oriented Programming Languages.
4. Apply the components of Graphics in Entertainment and Media Industry.
5. Analyze different Computer Graphics software related to Multimedia and Animation.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	2	3	2	2	2
CO-2	3	3	2	2	2
CO-3	2	2	2	2	3
CO-4	3	2	2	2	1
CO-5	3	2	3	2	2

UNIT-I

Introduction: The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Application Development of Hardware and software for computer Graphics, Conceptual Framework for Interactive Graphics, Overview, Scan: Converting Lines, Scan Converting Circles, Scan Converting Ellipses.

UNIT-II

Hardcopy Technologies, Display Technologies, Raster-Scan Display System, Video Controller, Random-Scan Display processor, Input Devices for Operator Interaction, Image Scanners, Working exposure on graphics tools like Dream Weaver, 3D Effects etc.

Clipping

Southland- Cohen Algorithm, Cyrus-Beck Algorithm, Midpoint Subdivision Algorithm.

UNIT-III

Geometrical Transformation

2D Transformation, Homogeneous Coordinates and Matrix Representation of 2D Transformations, composition of 2D Transformations, the Window-to-Viewport Transformations, Introduction to 3D Transformations Matrix.

UNIT-IV

Representing Curves & Surfaces

Polygon meshes parametric, Cubic Curves, Quadric Surface;

Solid Modeling

Representing Solids, Regularized Boolean Set Operation primitive Instancing Sweep Representations, Boundary Representations, Spatial Partitioning Representations and Constructive Solid Geometry Comparison of Representations.

UNIT-V

Introductory Concepts: Multimedia Definition, CD-ROM and the multimedia highway, Computer Animation (Design, types of animation, using different functions)

UNIT-VI

Uses of Multimedia, Introduction to making multimedia – The stage of Project, hardware & software requirements to make good multimedia skills and Training opportunities in Multimedia Motivation for Multimedia usage.

Referential Books:

1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice,2000.

2. D.J. Gibbs & D.C. Tsichritzs: Multimedia programming Object Environment& Frame work , 2000

3. Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, pearson, 2001
4. D.Haran & Baker. Computer Graphics Prentice Hall of India,1986

Operating System

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember the basic concepts of operating system.
2. Create the concept of primary memory, secondary memory and other storage devices.
3. Apply the concept of virtual memory.
4. Illustrate the structure of disk and explain disk management.
5. Understand the concepts of dead lock, starvation, bounded waiting and mutual exclusion conditions.
5. Analyze C.P.U scheduling, various Scheduling criteria and Scheduling Algorithms.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	1	2
CO-2	2	2	2	2	1
CO-3	2	1	2	2	3
CO-4	3	2	1	2	2
CO-5	3	3	2	2	2

UNIT-I

Introduction, What is an operating system, Simple Batch Systems, Multi-programmed Batch systems, Time- Sharing Systems, Personal – Computer Systems, Parallel systems, Distributed systems, Real- Time Systems**.**

Memory Management: Background, Logical versus physical Address space, swapping, Contiguous allocation, Paging, Segmentation

Virtual Memory: Demand Paging, Page Replacement, Page- replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations

UNIT-II

Processes: Process Concept, Process Scheduling, Operation on Processes.

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple – Processor Scheduling.

Process Synchronization: Background, The Critical – Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization

UNIT-III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock

UNIT-IV

Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Input or Output Devices, Storage Devices, Buffering,

Secondary Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap- Space Management, Disk Reliability.

UNIT-V

Information Management: Introduction, A Simple File system, General Model of a File System, Symbolic File System, Basic File System, Access Control Verification, Logical File System, Physical File system File – SystemInterface; File Concept, Access Methods, Directory Structure, Protection, Consistency Semantics File – System Implementation: File – System Structure, Allocation Methods, Free- Space Management.

Referential Books:

1. Silbersachatz and Galvin, " Operating System Concepts", Person, 5th Ed. 2001
2. Madnick E., Donovan J., " Operating Systems:,Tata McGraw Hill,2001
3. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000

Software Engineering

Course outcome:-

After Completion of this course, the students will be able to:
1. Remember strong fundamental concepts of software engineering and evolution to begin in practice as a software engineer.
2. Design approaches of software engineering, characteristics on which requirement and specification are evaluated.
3. Describe requirement, analyze different design issues and build blue print to develop products.
4. Evaluate maintenance as a part of software and use techniques of software maintenance.
5. Associate design with implementation and handle implementation issues on programming environment.
6. Apply new software models, techniques and technologies to bring out innovative and novelistic solutions.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO	PO5
CO.1	3	3	2	2	-
CO.2	2	2	3	2	-
CO.3	3	1	-	3	-
CO.4	3	3	3	2	-
CO.5	3	-	1	2	-
CO.6	3	3	3	3	-

UNIT-I
Software Engineering: Definition and paradigms, A generic view of software engineering.
UNIT-II
Requirements Analysis: Statement of system scope, isolation of top level processes and entitles and their allocation to physical elements, refinement and review.
Analyzing a problem, creating a software specification document, review for correctness, consistency, and completeness.
UNIT-III
Designing Software Solutions: Refining the software Specification; Application of fundamental design concept for data, architectural and procedural designs using software blue print methodology and object oriented design paradigm; Creating design document: Review of conformance to software requirements and quality.
UNIT-IV
Software Implementation: Relationship between design and implementation, Implementation issues and programming support environment, Coding the procedural design, Good coding style and review of correctness and readability.
UNIT-V
Software Maintenance: Maintenance as part of software evaluation, reasons for maintenance, types of maintenance (Perceptive, adoptive, corrective), designing for maintainability, techniques for maintenance.
UNIT-VI
Comprehensive examples using available software platforms/case tools, Configuration

Management.

Referential Books:

1. K.K.Aggarwal & Yogesh Singh "Software engineering", 2nd Ed., New Age International 2005.
2. I.Sommerville, "Software Engineering", Addison Wesley, 2002.
3. James Peter, W. Pedrycz, "Software Engineering: An Engineering Approach" John Wiley & Sons.

Optimization Techniques

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember the Basic Concept and Importance of Operations Research.
2. Apply different methods of OR in the real life scenarios.
3. Develop the understanding of different methods for finding the Solution of variety of problems.
4. Formulate the problems to enhance the analytical Ability by
5. Evaluate the limitations of the field of Operations.
6. Analyze different algorithms to achieve optimum conditions for job sequencing

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	1	2
CO-2	1	1	-	2	1
CO-3	-	-	2	-	-
CO-4	3	3	4	2	2
CO-5	2	3	2	3	3

UNIT-I

UNIT-I

Linear programming

Central Problem of linear Programming various definitions included Statements of basic theorem and also their properties, simplex methods, primal and dual simplex method, transport problem, tic-tac problem, and its solution. Assignment problem and its solution. Graphical Method Formulation, Linear Programming Problem.

UNIT-II

Queuing Theory

Characteristics of queuing system, Classification of Queuing Model Single Channel Queuing Theory, Generalization of steady state M/M/1 queuing models(Model-I, Model-II).

UNIT-III

Replacement Theory

Replacement of item that deteriorates replacement of items that fail. Group replacement and individual replacement.

UNIT-IV

Inventory Theory Cost involved in inventory problem- single item deterministic model economics long size model without shortage andwith shorter having production rate infinite and finite.

UNIT-V

Job Sequencing

Introduction, solution of sequencing problem Johnson s algorithm for n jobs through 2 machines

Referential Books:

1. Gillet B.E. “Introduction to Operation Research”
2. Taha,H.A. “Operation Research - an introduction”
3. Kanti Swarup “Operation Research”
4. S.D.Sharma “Operation Research”
5. Hira & Gupta “Operation Research”

Mathematics-III

Course outcome:-

After Completion of this course, the students will be able to:

1. Develop the basic idea of complex analysis with particular emphasis on Cauchy's Theorem and the calculus of residues.
2. Define continuity and differentiability for complex functions.
3. Analyze the existence-uniqueness theorem of differential equations.
4. Determine the solution of higher-order linear differential equations.
5. Apply the rules of differentiation including the power rule, product rule, quotient rule and chain rule to compute the expression for the derivative of a function
6. Compute the expression for the derivative of a composite function using the chain rule of differentiation.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	1	2
CO-2	2	3	3	-	3
CO-3	-	1	-	3	-
CO-4	3	-	3	1	2
CO-5	1	-	-	2	1

UNIT-I

COMPLEX VARIABLES: Complex Number System, Algebra of Complex Numbers, Polar Form, Powers and Roots, Functions of Complex Variables, Elementary Functions, Inverse Trigonometric Function.

UNIT-II

SEQUENCE, SERIES AND CONVERGENCE: Sequence, Finite and Infinite Sequences, Monotonic Sequence, Bounded Sequence, Limit of a Sequence, Convergence of a Sequence, Series, Partial Sums, Convergent Series, Theorems on Convergence of Series (statement, alternating series, conditional convergent), Leibnitz Test, Limit Comparison Test, Ratio Test, Cauchy's Root Test, Convergence of Binomial and Logarithmic Series, Raabe's Test, Logarithmic Test, Cauchy's Integral Test (without proof)

UNIT-III

VECTOR CALCULUS: Differentiation of Vectors, Scalar and Vector Fields, Gradient, Directional Derivatives, Divergence and Curl and their Physical Meaning.

UNIT-IV

FOURIER SERIES: Periodic Functions, Fourier series, Fourier Series of Even and Odd Functions, Half Range Series.

UNIT-V

ORDINARY DIFFERENTIAL EQUATIONS OF FIRST ORDER: Variable - Separable Method, Homogeneous Differential Equations, Exact Differential Equations, Linear Differential Equations, Bernoulli's Differential Equations, Differential Equations of First Order and First Degree by Integrating Factor.

UNIT-VI

ORDINARY DIFFERENTIAL EQUATIONS OF SECOND ORDER: Homogenous Differential Equations with Constant Coefficients, Cases of Complex Roots and Repeated. Roots, Differential Operator, Solutions by Methods of Direct Formulae for Particular Integrals, Solution by Undetermined Coefficients, Cauchy Differential Equations, (only Real and Distinct Roots) Operator Method for Finding Particular Integrals, (Direct Formulae).

Referential Books:

1. A.B. Mathur and V.P. Jaggi, "Advanced Engineering Mathematics", Khanna Publishers, 1999.

2. 2. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Co., 9th Revised Ed.

Computer Laboratory and Practical Work of Computer Graphics & Multimedia Application

Practical will be based on Paper Computer Graphics & Multimedia Application:
Covers UNIT-II, UNIT-III, UNIT-V of Syllabus

Introduction to DBMS

Course outcome:-

After Completion of this course, the students will be able to:

1. Apply the concept of Database.
2. Develop the understanding of different modeling techniques used in DBMS.
3. Remember the concept of File system and Data.

CO-PO MAPPING:

CO	POI	PO2	PO3	PO4	PO5
CO1	3	1			1
CO2	3	1	2		
CO3		2	3	1	1

UNIT-I

Introduction: Characteristics of database approach, data models, DBMS architecture and data independence.

UNIT-II

E-R Modeling: Entity types, Entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub classes; Super classes, inheritance, specialization and generalization.

UNIT-III

File Organization: Indexed sequential access files; implementation using B & B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach implementation and performance.

UNIT-IV

Relational Data Model: Relational model concepts, relational constraints, relational alzebra **SQL:** SQL queries, programming using SQL.

UNIT-V

EER and ER to relational mapping: Data base design using EER to relational language.

UNIT-VI

Data Normalization: Functional Dependencies, Normal form up to 3rd normal form.

Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization. Recovery Techniques, Database Security

Referential Books:

1. Abraham Silberschatz, Henry Korth, S.Sudarshan, “Database Systems Concepts”, 4th Edition, McGraw Hill, 1997.

2. Jim Melton, Alan Simon, “Understanding the new SQL: A complete Guide”, Morgan Kaufmann Publishers, 1993.

3. A.K.Majumdar, P. Bhattacharya, “Database Management Systems”, TMH, 1996.

4. Bipin Desai, “An Introduction to database systems”, Galgotia Publications, 1991.

Java Programming and Dynamic Webpage Design

Course outcome:-

After Completion of this course, the students will be able to:

1. Create Java programs that solve simple business problems.
2. Analyze and validate user input.
3. Define a Java class based on a UML class diagram.
4. Illustrate a test plan to validate a Java program.
5. Demonstrate the use of good object-oriented design principles including encapsulation and information hiding through some basic java programming designs.

CO-PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5
CO-1	2	3	3	2	2
CO-2	2	2	1	2	2
CO -3	3	2	1	2	2
CO -4	3	1	1	2	1
CO-5	3	2	3	2	2

UNIT-I

Java Programming: Data types, control structured, arrays, strings, and vector, classes (inheritance, package, exception handling) multithreaded programming.

UNIT-II

Java applets, AWT controls (Button, Labels, Combo box, list and other Listeners, menu bar) layout manager, string handling (only main functions)

UNIT-III

Networking (datagram socket and TCP/IP based server socket) event handling, JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling.

UNIT-IV

HTML: use of commenting, headers, text styling, images, formatting text with <FONT>, special characters, horizontal rules, line breaks, table, forms, image maps, <META> tags, <FRAMESET> tags, file formats including image formats.

UNIT-V

Java Servlets: Introduction, HTTP Servlet Basics, The Servlet Lifecycle, Retrieving Information, Sending HTML Information, Session Tracking, Database Connectivity

UNIT-VI

Java Server Pages: Introducing Java Server Pages, JSP Overview, Setting Up the JSP Environment, Generating Dynamic Content, Using Custom Tag Libraries and the JSP Standard Tag Library, Processing Input and Output.

Referential Books:

1. Patrick Naughton and Herbertz Schildt, "Java-2 The Complete Reference" 199, TMH.
2. Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998.
3. Ivor Horton, "Beginning Java-2" SPD Publication
4. Jason Hunter, "Java Servlet Programming" O'Reilly
5. Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998

Computer Network

Course outcome:-

After Completion of this course, the students will be able to:

1. Understand the fundamental concepts of computer networking and enumerate the layers of the OSI model and TCP/IP.
2. Remember the basic taxonomy and terminology of the computer networking area, independently understand basic computer network technology.
3. Analyze different advanced networking concepts and explain Data Communications System and its components.
4. Build the skills of sub-netting and routing mechanisms, gain some knowledge in the specific areas of networking such as in the design and maintenance of individual networks.
5. Evaluate basic protocols of Computer Networks, and how they can be used to assist in network design and implementation.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	3	2	2	2
CO-2	3	2	2	2	2
CO-3	3	2	2	2	3
CO- 4	3	2	2	2	2
CO-5	3	2	2	2	2

UNIT-I Basic Concepts: Components of data communication, distributed processing, standards and organizations. Line configuration, topology, Transmission mode, and categories of networks.
OSI and TCP/IP Models: Layers and their functions, comparison of models. Digital Transmission: Interfaces and Modems: DTE-DCE Interface, Modems, Cable modems.
UNIT-II Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon capacity, comparison of media.
UNIT-III Telephony: Multiplexing, error detection and correction: Many to one, One to many, WDM, TDM, FDM, Circuit switching, packet switching and message switching. Data link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures. **Point to point controls:** Transmission states, PPP layers, LCP, Authentication, NCP.
ISDN: Services, Historical outline, subscriber's access, ISDN Layers and broadcast ISDN.
UNIT-IV Devices: Repeaters, bridges, gateways, routers, The Network Layer; Design issues, Routing algorithms, Congestion control Algorithms, Quality of service, Internetworking, Network-Layer in the internet.
UNIT-V Transport and upper layers in OSI Model: Transport layer functions, connection management, functions of session layers, presentation layer and application layer.
Referential Books: 1. A.S.Tanenbaum, "Computer Networks"; Pearson Education Asia, 4th Ed. 2003.
2. Behrouz A.Forouzan, "Data Communication and Networking", 3rd Ed. Tata McGraw Hill, 2004.
3. William stallings, "Data and computer communications", Pearson education Asia, 7th Ed., 2002.

Numerical Methods

UNIT-I Roots of Equations: Bisections Method, False Position Method, Newton's Raphson Method, Rate of convergence of Newton's method.

UNIT-II Interpolation and Extrapolation : Finite Differences, The operator E, Newton's Forward and Backward Differences, Newton's dividend differences formulae, Lagrange's Interpolation formula for unequal Intervals, Gauss's Interpolation formula, Starling formula, Bessel's formula, Laplace-Everett formula.

UNIT-III Numerical Differentiation Numerical Integration : Introduction, direct methods, maxima and minima of a tabulated function, General Quadratic formula, Trapezoidal rule, Simpson's One third rule, Simpson's three- eight rule.

UNIT-IV Solution of Linear Equation: Gauss's Elimination method and Gauss's Siedel iterative method.

UNIT-V Solution of Differential Equations: Euler's method, Picard's method, Fourth-order Ranga – Kutta method.

Referential Books: 1. Scarbourogh, "Numerical Analysis".

2. Gupta & Bose S.C. "Introduction to Numerical Analysis, "Academic Press, Kolkata, 3. S.S.Shashtri, " Numerical Analysis", PHI

Minor Project

Evaluation will be based on Summer Training held after fourth semester and will be Conducted by the college committee only.

Viva-Voice on Summer Training

The viva will be conducted based on summer training of four weeks after the end of fourth Semester and will be Conducted by the college committee only.

Computer Laboratory and Practical Work of DBMS

Practical will be based on Paper Data Base Management System : on UINT-IV converging the concept from UNIT-II to UNIT-VI of Syllabus.

Computer Laboratory and Practical Work of Java Programming and Dynamic Webpage Design

Practical will be based on Paper Java Programming & Website Design : on Whole Syllabus

Computer Network Security

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember the basic concepts of System Security.
2. Develop familiarity with the Network security and Architecture.
3. Analyze different models of Network Security and understand their importance.
4. Understand the importance of Web Security.
5. Evaluate IP Security Architecture.

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	2	1	2
CO-2	-	3	-	-	-
CO-3	2	3	2	2	2
CO-4	2	-	3	1	1
CO-5	1	3	1	-	3

UNIT-I

Introduction: Attack, Services and Mechanism, Model for Internetwork Security.

Cryptography: Notion of Plain Text, Encryption, Key, Cipher Text, Decryption and cryptanalysis; Public Key Encryption, digital Signatures and Authentication.

UNIT-II

Network Security:

Authentication Application: Kerveros, X.509, Directory Authentication Service, Pretty Good Privacy, S/Mime.

UNIT-III

IP security Architecture: Overview, Authentication header, Encapsulating Security Pay Load combining Security Associations, Key Management.

UNIT-IV

Web Security: Requirement, Secure Socket Layer, Transport Layer Security, and Secure Electronic Transactions.

UNIT-V

Network Management Security: Overview of SNMP Architecutre-SMMPVI1 Communication Facility, SNMPV3.

UNIT-VI

System Security: Intruders, Viruses and Relate Threats, Firewall Design Principles. Comprehensive examples using available software platforms/case tools, Configuration Management.

Referential Books:

1. W. Stallings, Networks Security Essentials: Application & Standards, Pearson Education, 2000.
2. W.Stallings, Cryptography and Network Security, Principles and Practice, Pearson Education, 2000.

Information System: Analysis Design & Implementation

Course outcome:-

After Completion of this course, the students will be able to:

1. Understand System Development Life Cycle.
2. Analyze and specify the requirements of a system by gathering data.
3. Develop system proposal.
4. Design system components and environments.
5. Apply different application development methodologies like OOAD.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	1	-	3
CO-2	3	-	2	3	-
CO-3	2	3	-	3	-
CO-4	1	1	2	-	2
CO-5	3	2	1	3	-

UNIT-I

Overview of System Analysis and Design: Systems Development Life Cycle; concept and Models: requirements determination, logical design, physical design, test planning, implementation, planning and performance evaluation, communication, interviewing, presentation skills; group dynamics; risk and feasibility analysis; group based approaches, JAD, structures walkthroughs, and design and code reviews; prototyping; database design software quality metrics; application categories software package evaluation and acquisition.

UNIT-II

Information Requirement Analysis: Process modeling with physical logical data flow diagrams, data modeling with logical entity relationship diagrams.

UNIT-III

Developing a Proposal: Feasibility study and cost estimation.

System Design: Design of input and control, design of output and control, file design/database design, process, user interface design, prototyping; software constructors; documentation.

UNIT-IV

Application Development Methodologies and CASE tools: Information engineering structured system analysis and design, and object oriented methodologies for application development data modeling, process modeling, user interface design, and prototyping, use of computer aided software engineering (CASE) tools in the analysis design and implementation of information systems.

UNIT-V

Design and Implementation on OO Platform: Object oriented analysis and design through object modeling technique, object modeling, dynamic modeling and functional object oriented design and object oriented programming systems for implementation, object oriented data bases.

UNIT-VI

Managerial issues in Software Projects: Introduction to software markets; planning of software projects, size and cost estimates; project scheduling; measurement of software quality and productivity, ISO and capability maturity models for organizational growth.

Referential Books:

1. I.T.Haryszkiewycz, Introduction of System Analysis and Design, Pearson Education, (PHI) 1998.
2. V.Rajaraman, Analysis and Design of Information System, Pearson Education, 1991.
3. J.A.Senn, "Analysis and Design of Information Systems"
4. J.K.Whiten., L.D.Bentley, V.M.Beslow, "System Analysis and Design Methods", (Galgotia Publications Pvt.Ltd.) 1994

E-Commerce

Course outcome:-

After Completion of this course, the students will be able to:

1. Understand the Concept of E-commerce and Business Strategy in Electronic Age and different models of E-Commerce.
2. Administer and Maintain B2B E-Business sites.
3. Understand the Internet Architecture and Electronic Payment System.
4. Demonstrate the knowledge of Legal and Regulatory policy issues in E-commerce.
5. Evaluate E-commerce models and identify the requirements for starting up and operating E-business sites.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	2	-	1	2
CO-2	3	1	3	3	-
CO-3	1	-	2	-	3
CO-4	2	3	3	-	2
CO-5	-	2	1	2	3

UNIT-I

Introduction to E-Commerce: The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic E-commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, E-Commerce in Perspective.

Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, Porter's Model, First Mover Advantage Sustainable Competitive Advantage, Competitive Advantage using E -Commerce, Business Strategy, Introduction to Business Strategy, Strategic Implications of IT, Technology, Business Environment, Business Capability, Exiting Business Strategy, Strategy Formulation & Implementation Planning, E-Commerce Implementation, E-Commerce Evaluation.

UNIT-II

Business-to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2B Ec, Procurement Management Using the Buyer's Internal Marketplace, Just in Time Delivery, Other B2B Models, Auctions and Services from Traditional to Internet Based EDI, Intergration with Back-end Information System, The Role of Software Agents for B2B EC, Electronic marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: The Nuts and Bolts, EDI & Business.

UNIT-III

Internet and Extranet : Automotive Network Exchange, The Largest Extranet, Architecture of the Internet, Intranet and Extranet, Intranet software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment, The Extranets, The structures of Extranets, Extranet products & services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues.

Electronic Payment Systems : Is SET a failure, Electronic Payments & Protocols, Security Schemes in Electronic payment systems, Electronic Credit card system on the Internet, Electronic Fund transfer and Debit cards on the Internet, Stored – value Cards and E- Cash, Electronic Check Systems, Prospect of Electronic Payment Systems, Managerial Issues.

UNIT-IV

Public Policy: From Legal Issues to Privacy : EC- Related Legal Incidents, Legal Incidents, Ethical & Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free speech, Internet Indecency & Censorship, Taxation & Encryption Policies, Other Legal Issues: Contracts, Gambling & More, Consumer & Seller Protection In EC.

UNIT-V

Infrastructure For EC : It takes more than Technology, A Network Of Networks, Internet Protocols, Web- Based client/ Server, Internet Security, selling on the web, Chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial Issues.

Referential Books:

1. David Whiteley, " E-Commerce", Tata McGraw Hill, 2000
2. Eframi Turban, Jae Lee, David King, K. Michale Chung, "Electronic Commerce", Pearson Education, 2000

Knowledge Management

Course outcome:-

After Completion of this course, the students will be able to:

1. Remember different knowledge management concepts.
2. Create an understanding of data mining and knowledge discovery.
3. Understand the use of one of the approaches of MIS i.e. Executive information system for developing the strategic information in an organization.
4 .Evaluate different approaches of MIS and take business decisions for different organizations.

CO/PO MAPPING-

CO/PO	PO1	PO2	PO3	PO4	PO5
CO-1	3	-	2	-	-
CO-2	1	2	1	3	-
CO-3	2	3	3	2	2
CO-4	-	2	-	-	-

UNIT-I

Business Intelligence and Business Decisions: Modeling Decision Process; Decision support systems; Group decision support and Groupware Technologies.

UNIT-II

Executive Information and support Systems: Business Expert System and AI, OLTO & OLAP; Data Warehousing; Data Marts, Data Warehouse architecture; Tools for data warehousing.

UNIT-III

Multi- Dimensional analysis: Data mining and knowledge discovery; Data mining and Techniques; Data mining of Advance Databases.

UNIT-IV

Knowledge Management Systems: Concept and Structure KM systems, techniques of knowledge management appreciation & limitation.

Referential Books:

1. Decision support system, EIS, 2000
2. W.H.Inmon, "Building Data Warehousing", Willey, 1998.
3. Han, Jiawei, Kamber, Michelinal, " Data Mining Concepts & Techniques", Harcourt India, 2001

Major Project

Evaluation will be based on held after fourth semester and will be Conducted by the college committee only.

Presentation/Seminar based on Major Project

Presentation/Seminar based on Major Project will be evaluated by external examiner only.