Shivaji University, Kolhapur

Revise Syllabus of
Bachelor of Computer Application (BCA)
(Under the Faculty of Commerce)
w.e.f. Academic year 2014-15 and onwards
BCA Part - II
(Semester III & IV)

Paper No.	Semester - III	Paper No.	Semester - IV
301	Cost Accounting	401	Entrepreneurship Development
302	HRM	402	Organizational Behaviour
303	System Analysis & Design	403	DBMS using MS-Access.
304	Object Oriented Programming with C++	404	Web Technology
305	Computer Oriented Statistical Methods	405	Computer Mathematics
306	Lab Course Based on Paper No. 304	406	Lab Course Based on Paper No. 403 & 404
307	Lab Course Based on Paper No. 305 (Using MS-Excel)	407	Mini Project.

BCA II SEMIII

Paper No. 301

Cost Accounting

Objectives: To gain the understanding of costing concepts and procedure in cost accounting system.

Unit - 1: Introduction to cost Accounting **(15)**

Concept of cost, costing, Cost Accounting and Cost Accountancy, Objectives, Advantages and Limitations of Cost Accounting, Difference between cost Accounting & Financial Accounting, Cost Unit and cost centre. Elements of Cost, Preparation of cost sheet.

Unit - 2: Accounting and control of Elements of Cost **(15)**

Methods of pricing of material issues FIFO, LIFO, Simple Average, weighted Average. Time keeping and Time Booking, ----- Time, over time, and Labour Turnover, Classification, allocation, apportionment and absorption of overheads (Labour and overhead only Theory)

Unit - 3: Methods of Costing - Process **(15)**

Costing excluding calculation of Equivalent production, contract costing, service costing (Transport Costing).

Unit - 4: Reconciliation of Cost and Financial Accounts- **(15)**

Reference Books -

1. Jawahar Lal, Cost Accounting - Tata-McGraw Hill Publishing Co, New Delhi.

2.M.N.Arora, Cost Accounting - principles and Practice, Vikas Publishing House New Delhi,

3. D.K. Mittal and Luv Mittal, Cost Accounting, Galgotia Publishing co. New Delhi.

4. Ravi M. Kishore - Cost Accounting, Taxman Allied services pvt. Ltd New Delhi.

5. B.M. Lall Nigam and I.C.Jain, Cost Accounting, Principles, Methods and Techniques, K.L. Malik & sons Pvt. Ltd., Daryaganj, New Delhi.

6. M.C. Shukla, T.S. Grewal and M.P.Gupta, Cost Accounting, Text and problems, S. Chand and Co. Ltd. New Delhi.

7. S.P. Jain and K.L. Narang, Cost Accounting, Principles and Methods, Kalyani Publishers, Jalandhar.

8. S.N. Maheshwari & S.N. Mittal, Cost Accounting, Theory and Problems. Shre Mahabir Book Depot, New Delhi.

Course Outcome Number	**Course Outcome**
CO1	Describe in brief three major Element of cost.
CO2	Describe Overhead Cost, classification, allocation, apportionment & absorption of overhead cost.
CO3	Describe Reconciliation of cost & financial account & importance of reconciliation of cost & financial account.
CO4	Analyze the concept of cost, costing, cost accounting, cost unit & cost Centre.
CO5	Describe the different methods of pricing material issue & its advantages & disadvantages
CO6	Describe process costing & features of process costing.

Semister III
Paper No.302

HRM

Unit I: Introduction to HRM

Definition & concept of HRM, HRD, functions of HRM. Organization of HR Dept, Role of HRM, Limitations & challenges of HRM in I.T. Industry. Recent trends in I.T. Industry.

Unit II: Human resource Planning & Development

Concept of HRM, Process of HRP in I.T. Industry. Concept of Recruitment & selection Sources of recruitment followed in I.T. Industry selection procedure followed in I.T. industry. concept of Training & Development. Training & Development methods followed in industry.

Unit III: Administration practices

Defferent Administrative Practices folled in I.T. industry, virtual org. HRIS, stress mgt. practices in I.T. industry.

Unit IV : Employee Separation

Employee Separation practices in I.T. industry. Exit interview, external mobility, Retrenchment, Lay off.

Course Outcome Number	**Course Outcome**
CO1	The students will be able to understand the basic principles and fundamental concepts of human resource management
CO2	Understand and implement the process of recruitment and selection followed in IT industries
CO3	Understand and implement the process of training and development followed in IT industries
CO4	Analyze the sources of stress and strategies used to cope with stress in IT industries
CO5	Describe the concept and application of HRIS in organizations
CO6	Understand and analyze different separation practices followed in IT industry

Semester - III

Paper No.303

System Analysis and Design

Unit I: Introduction to System Concept

System Concept, elements, types of System, Characteristics of System, Program, Software System, Computer based System, SDLC,

Unit II: System Analysis-Role and Traits

Preliminary analysis - Problem Solving attitude, Analyzing user requirement, Fact Finding - Interviews, questionnaire, observation, historical documents, Preliminary report, detailed analysis-review and assignment - Preliminary report, authorization and notification. Feasibility study, DFD and ERD.

Unit III: System Design

Input design - Data entry methods, Controlling data entry, guidelines for designing data entry screens, Output design - Guidelines, selecting best media, Formatting reports, report types, Controlling output. File design - Data storage, Capabilities and methods, disks, tapes, CD, Sequential access files, indexed files, direct access files.

Unit IV: Testing and Maintenance -

Software testing strategies - Unit testing, integration, testing, Validation testing, System testing, debugging Maintenance - Problems with maintenance, Structured and unstructured maintenance, organizing for maintenance, maintenance side effects.

Reference Books:-

1) System analysis and design - Perry Edwards Mc Guraw Hill international Education.

2) Software Engineering - A practitioners approach - Roqerr pressman (Mc Graw Hill Series)

3) System Analysis and Design - Elias M. Awad

4) Engineering MIS for Strategic Business Process - Arpita Gopal

5) Analysis and Design of Information System - James A Sen.

Course Outcome Number	Course Outcome
CO1	Ability to gather and Analyzing Users requirements of the system.
CO2	Develop some basic level of system design
CO3	Apply different testing and debugging techniques and analyzing their effectiveness.
CO4	Able to understand and apply the basic System analysis role and traits in real software development.
CO5	Ability to work in a team as well as independently on software development.
CO6	Apply standard coding practices.

Sem-III

Paper No. 304

Object Oriented programming with C++

Lab Course based on paper No. 304

Unit 1: Programming with C++

Introduction, Data types, Constants & variables, arrays, Operators, Operator precedence, Control structures, (selective and iterative) inline function, function overloading.

Unit 2: Introduction to object oriented programming;

Basic concept of OOP, Benefits and futures, class-Def, syntax, member function and data members, Access specifies static data member, defining objects, array of object friend function, object as function argument friend class.

Unit 3 : Constructor, destructors, & inheritance constructor- Definition, syntax, rules, types of constructors- decant, parameterized, copy, multiple constructors, destructor- definition, syntax, use and working, inheritance: meaning, types- single, multi level multiple.

Unit 4: Polymorphism and file handling

Polymorphism: Meaning, compile Time and Run time, virtual functions, pure virtual function, file, classes for file stream operations, opening and classing files, modes, file pointers, input- output operations, get ( ) Put ( ), read ( ) Write ( ).

Course Outcome Number	**Course Outcome**
CO1	Understand the basic terminology used in computer programming
CO2	Write, compile and debug programs in Object Oriented Programming language.
CO3	Use different data types in a computer program.
CO4	Design programs involving class, inheritance, polymorphism, Constructor and Destructor.
CO5	Explain the difference between control structures
CO6	Understand the declaration of Class and Objects.

Semister III
Paper No. – 305

Computer Oriented Statistical Methods

Unit 1 – Introduction to Statistics (12)

1.1 Meaning and Scope of Statistics, Primary and Secondary data.

1.2 Frequency, Frequency distribution, Qualitative and quantitative data, Discrete and Continuous variables.

1.3 Representation of frequency distribution by graphs: Histogram, Frequency polygon, Frequency curve, O give curve. Representation of Statistical data by Bar diagram and Pie chart.

1.4 Numerical examples based on 1.2, 1.3.

Unit 2 – Measures of Central Tendency and Dispersion (18)

2.1 Measures of central Tendency (Averages)

2.1.1 Meaning of averages, Requirements of good average.

2.1.2 Definitions of Arithmetic mean (A.M.), Combined mean, Median, Quartiles Mode, Relation between mean, median and mode.

2.1.3 Merits and Demerits of Mean, Median and Mode.

2.1.4 Numerical examples based on 2.1.2.

2.1.5 Determination of Median and Mode by Graph.

2.2 Measures of Dispersion (Variability):

2.2.1 Meaning of Variability, Absolute and Relative measures of dispersion.

2.2.2 Definitions of Q.D., M.D., S.D. and Variance, Combined variance and their relative measures, Coefficient of Variation (C.V.).

2.2.3 Numerical examples based on 2.2.2.

Unit 3 – Analysis of Bivariate data (15)

3.1 Correlation:

3.1.1 Concept of Correlation, Types of correlation (Positive, Negative, Linear and Non-linear), Methods of studying correlation: Scatter diagram, Karl Pearson's Correlation Coefficient (r) and Spearman's Rank Correlation Coefficient (R).

3.1.2 Interpretation of $r = +1$, $r = -1$, $r = 0$.

3.1.3 Numerical examples on 3.1.1and 3.1.2

3.2 Regression:

3.2.1. Concept of Regression, Definitions of regression coefficients and Equations of regression lines. Properties of regression coefficients. (Statements only)

3.2.2 Numerical examples on 3.2.1.

Unit 4 – Sampling Techniques and Time Series Analysis (15)

4.1 Sampling Techniques:

4.1.1 Definitions of Sample, Population, Sampling, Sampling Method and Census method. Advantages of sampling method over census method.

4.1.2 Types of sampling: Simple Random Sampling (with and without replacement), Stratified Random Sampling, Merits and Demerits of S.R.S. and Stratified Sampling

4.1.3 Simple examples on Stratified Sampling.

4.2 Time Series: (Analysis and Forecasting)

4.2.1 Meaning and components of Time Series

4.2.2 Methods of determination of trend by

(I) Method of Moving Averages.

(II) Method of Progressive Averages.

(III) Method of Least Squares (St.Line only)

4.2.3 Numerical examples on 4.2.2.

Note: Use of Nonprogrammable calculator is allowed.

Reference Book

1) Mathematical Statistics by H.C. Saxena and J. N. Kapur

2) Business Statistics by G. V. Kumbhojkar

3) Fundamentals of Statistics by S. C. Gupta

4) Business Statistics by S. S. Desai

5) Business Statistics - SIM-Shivaji University, Kolhapur

Course Outcome Number	**Course Outcome**
CO1	Construct Bar diagram, Pie diagram or Sub-divided bar diagram.
CO2	Calculate measure of central tendency which is representative of the entire data.
CO3	Calculate measure of dispersion to find reliability of measures of central tendency.
CO4	Calculate correlation coefficient between two variables.
CO5	Estimate the value of one variable if value of another variable is given
	(Two variables must be correlated)
CO6	Estimate trend values by using
	i) Progressive average method ii) Moving average method

Sem.III

Paper No. 306

Lab Course Based on paper No. 304

Unit 1: Simple C++ Programs without Class.

a) Using Control structures

b) Illustrating function and

c) Function Overloading

Unit 2: Programs based on Class

a) Defining class & creating an object

b) Using various accesses specifies

c) Using static data members.

d) Creating array of object

e) Friend class and friend function.

Unit 3: Programs based on Constructor, destructor & inheritance

a) Creating constructor, parameterized, copy, multiple constructors

b) Program using destructor.

c) Inheritance - Simple, Multiple, multilevel.

Unit 4: Programs on Polymorphism & file handling :-

a) Programs based on following concepts

i) Compile Time

ii) Run Time

iii) Virtual Function

b) Programs based on file handling

i) Opening, closing, reading, writing, file.

ii) Input - Output operations.

(Note: At least ten experiments to be completed in prescribed times for the given subject.)

Course Outcome Number	**Course Outcome**
CO1	Understand the basic concept of Object Oriented Programming, and its different modules that include class, objects and looping expressions, Constructor and destructor, inheritance, polymorphism.
CO2	Acquire knowledge about the basic concept of writing a program.
CO3	Role of constants, variables, identifiers, operators and other building blocks of Object Oriented Programming Language.
CO4	Use of conditional expressions and looping statements to solve problems associated with
	Conditions and repetitions.
CO5	Role of Class and Objects involving the idea of modularity.
CO6	To formulate problems and implement algorithms in Object Oriented Programming.

Semester -III

Paper No. 307

Lab Course based on Paper No. 305

Lab Assignments

1-Formation of frequency distribution

2-Construct following types of charts with the help of given data.

a) Bar

b) Pie

c) Histogram

d) Ogive curve

3- Calculate Mean, mode and Median of given series (without using in built functions for mean, Mode Median in MS-Excel)

4- Calculate S.D. and C.V. (without using in built functions for SD & CV in MS-Excel)

5- Computation of correlation coefficient and rank correlation coefficient using appropriate statistical formula-

6- Time series computation of trend values by- Moving average Method

- Progressive average method
- Least square Method

(Note- Provide required data for each pract. Assignment)

Nature of question paper- Given in Structure 7(b)

Course Outcome Number	**Course Outcome**
CO1	To understand the knowledge of MS- Excel
CO2	To understand the different charts used in MS-Excel
CO3	To understand the Mean, Mode, Median calculation in Excel
CO4	To understand Standard deviation and Coefficient of Variation
CO5	To understand the various graphs & charts
CO6	To compute of trend values by moving average method

B.C.A. Part-II

Semester- IV

Paper No-401

Entrepreneurship Development

Objective:-

1. To impart theoretical knowledge & Entrepreneurship
2. To develop Entrepreneurship qualities and skills.

Unit-I –Entrepreneurship: Concept

Classification – Functions- Qualities of successful Entrepreneurship – Concept of Entrepreneur and Netprenour. Chanteys before Entrepreneurship in mode Era.

Unit-II –Entrepreneurship

Concept- Importance. Theories of Entrepreneurship (Josheph Schumpeters Innovation Theory, McCllelavd's Theory of Need of status withdrawal).

Entrepreneurship in service Industry- Factors stimulating Entrepreneurship obstacles in Entrepreneurship Growth.

Unit-III –Entrepreneurship Development

Concept-objectives –Process-problems and me measures in Entrepreneurship development. Institutional support for Entrepreneurship development Entrepreneurship development – Institute of India (EDI) Ahmdabad National Institute for Entrepreneurship and small Business Development, (NIESBD) New Delhi, National Institute for Small Industry Extension Training (NISIET) Hyderabad, Small Industries Development Organization (SIDO) Small Industry Development Bank of India (SIDBI), Technical Consultancy Organizations (TCOS), District Industry censes (DIC)

Unit-IV – Project Management

Concept of project- classification of project- Stays of Project Management- Reasons for faihre for project. Project for cale lutes, Retail stores, Hotel Hospital, Dairy.

Reference Books

1-Dynausic of Entrepreneurship Development - & Management –By vasaut Desai

2- Entrepreneurship Development in India- By C.B.Gupta and N.P.Srinivasan

3- Entrepreneurship Development-By S.S. Khanke

4- Entrepreneurship Development-By Godron E and Natarajan .

5-Udyojakata- By Prabhalear Deshmuke project preparation appraisal,

6-Implementation –By Prasanna Chandra

7- Entrepreneurship Development –By S.L.Gupta & Arun Mittal

Course Outcome Number	**Course Outcome**
CO1	Describe the qualities of successful entrepreneur.
CO2	Describe the theories of entrepreneurship
CO3	Analyze the various challenges of Entrepreneurship in modern era
CO4	Describe the process of entrepreneurship development
CO5	Describe the reasons for failure of project

Semester- IV

Paper No-402

Organizational Behaviour

Objective:-

1. Time students should understand the impart that individual, group and structures have on their behavior within the organization.

2. They should identify the required behavioral model in the Organizational

Unit-I - Fundamentals of Organizational Behaviour

Definition, Nature, Scope and coals of Organizational Behaviour. Disciplines continuing to O.B, Evolution of O.B. Fundamental concept of organizational behavior

Unit-II - Attitude, Values and Motivation

Effects of employee attitudes, components of Attitude Personal and organizational Values. Nature and Importance of Motivation Motivation process- Motivation model. Maslow's Need Hierarchy Theory. Herzberg's Two Factor Theory Mc Gregor's x and y Theory

Unit-III- Personality and work steers

Definition of personality Determinants of personality Teori yes of personality: Trait Theory yes

Time big five model. Pe-Theory: Myers- Briggs type personality. Self Theory: house of control. Meaning and defection of strers. Sources of streb: Individual level Organizational level. Type A and Type B personality course of stress in Organizational

Unit-IV- Group Behaviour and Cont like

Nature of Group. Types of Groups. Team Building and Effectine team works. Stages of group formation. Concept of conflict- Interpersonal, intrapersonal intergroup organizational, Johari window. Conflict management strategies.

Recommended Books

1- Organizational Behaviour Text, Course and Games- By K.Aswathappa. Himalaya publishing House, Mumbai.

2- Organizational Behaviour- By Final Luthans McGraw-Hill

3- Organizational Behaviour through Indian Philosophy- By M.N. Mishra, Himalaya Publication House.

4- Organizational Behaviour- By Steplen Robbins, Timotly Judge, Seema Sangli Peason Prentice Hall

Course Outcome Number	Course Outcome
CO1	Analyses the behavior of individuals and groups in organizations in terms of organizational behavior theories, models and concepts;
CO2	understand various disciplines contributing to OB and have a basic knowledge of key relationships between them
CO3	Summarize and discuss values, personality, attitude, individual decision and motivation theories
CO4	Discuss foundations of group behavior
CO5	Explain the dynamics of conflict and negotiation

Semester- IV

Paper No. 403

Database Management through MS-Access

Unit-I - Introduction of Database

Definition of Database, Needs, features Database Management Systems (DBMS): Definition, components, file system, comparison of file processing system with DBMS, functions of DBMS, advantages, disadvantages of DBMS, Structure of DBMS, Services provided by DBMS, schema, subschema, data abstraction, data independence, architecture of database system, data dictionary, database administration, database manager.

Unit-II - Organization of Database System

Introduction of file, file types, organization of file- heap file organization, serial file organization, sequential, index sequential file, random access file (direct access file) Types of Database System: **c**entralized database system, client-server system, distributed database system.

Unit-III - Data Models

Introduction, definition, features of data models, Object based data models- Entity Relationship Model, cardinality, Record based models- Relational Model, Network Model, Hierarchical Model, Physical Data Models

Keys: Primary key, foreign key, candidate key, super key, unique key

Normalization: Concept of normalization, advantages, First NF, Second NF, Third NF, examples of normalizations

Unit-IV - Relational algebra

Introduction, fundamental operations on relational algebra- select, project, renames, set operators, join operators

SQL: Introduction of SQL, features, SQL data types, SQL operators, DDL- create table, describe table, alter table, drop table commands, DML-insert, delete, update commands, DQL- select command, aggregate functions, order by clause

Database Management through Ms-Access: Introduction of Ms-Access, features, database creation, table creation, insert records, queries, forms and report creation, introduction to latest versions of Ms-Access.

Case Study: Design Database System for- Library management system, Bank management system, Inventory management system

Reference Books:

1. Database System Concept – Silberschatz, Korth
2. Fundamentals of Database System- Ramez Elmasri,Shamkant B. Navathe(Pearson)
3. Database Management System- Raghu Ramkrishnan,Gehrke (McGraw Hill)
4. Database Management System- R.Panneerselvam
5. Ms-Office Complete reference

Course Outcome Number	**Course Outcome**
CO1	To analyze Data Base design methodology.
CO2	Acquire knowledge in fundamentals of Data Base Management System.
CO3	Be able to analyze the difference between traditional file system and DBMS.
CO4	Able to handle with different Data Base languages.
CO5	Draw various data models for Data Base and Write queries mathematically.
CO6	Understand and apply database normalization types

Semester- IV

Paper No. 404:
Web Technology

Unit-I - Internet and WWW

What is Internet? Introduction to internet and its applications, browsers, web servers

Web Development- introduction, features, steps in web development, limitations. HTML: What is HTML, what is tag and attributes, heading tags, text formatting tags, paragraph tags, font tag. List Tags-ordered and unordered, tags:
, <HR>.,<Marquee>, Hyperlink, <A> Image and Image maps, <IMG>, <MAP>,<AREA>.

Tables: table tags, aligning entire table, alignment of row, cell and contents, table attributes, background color setting, width, adding a border, spacing within a cell, spacing between the cells, rowspan and colspan, Table Sections and column properties. Insert audio and video files- <BGSOUND><EMBED><IMG DYNSRC>

Frames: Introduction to Frames, the <FRAMESET> tag, nesting <FRAMESET> tag, placing content in frames with the <FRAME> tag, targeting named frames, creating floating frames <IFRAME>

Unit-II- Style Sheets

Introduction of CSS, inline, internal and external style sheet <link> <STYLE>, CSS selector- element, id, class, group. Cross Browser Testing.

Forms : Creating Forms, The <FORM> tag, form attributes, named input fields, <INPUT> tag, drop down and list boxes, hidden, text area, password, button, action buttons- Submit, Reset, Image. <INPUT> attributes radio, checkbox. Limitations of HTML,

Unit-III- Java Script

Introduction, Difference in Client-Side and Server-Side Script, features, introduction to Java script keywords, data types, control statements (if-else, looping) with examples, objects in java. Events and Event Handlers, Dialogue boxes, Built-in functions and Validations

Unit-IV-Introduction to Server-Side scripting

ASP – Advantages and limitations, server set-up for ASP (PWS/IIS), built in ASP objects, loop Structure, control structure (If-Else-Then), methods to get data from Clients – (GET and POST), difference between GET and POST, database handling, connections and record set object. **Case Studies**: On line Shopping Website, University Website

Reference Books:

1. HTML, JavaScript, DHTML and PHP, Ivan Bayross, BPB publications, 2010 Edition
2. HTML Black Book, Steven Holzner, DreamTech Press, 2009 Edition
3. Web Technologies Black Book, Kogent Learning Solutions Inc., Dreamtech press, 2011 Edition
4. ASP.NET 4.0 Black Book, Kogent Learning Solutions Inc., Dreamtech press, 2012 Edition
5. ASP.NET 4.0 Programming, Joydip Kanjilal, TATA McGraw-Hill Education Private Ltd., 2010 Edition

Course Outcome Number	**Course Outcome**
CO1	Understand the basic concept of Hypertext markup language and different tags.
CO2	Write, compile and debug programs in HTML language.
CO3	Understanding the concept of server side scripting.
CO4	Design programs using java script.
CO5	Explaining defining variables, control structures in java script
CO6	Understand the basic programs of HTML and Java script

B.C.A. Part-II

Semester- IV

Paper No-405

Title: Mathematical Foundation

Unit-1: SETS **(15)**

1.1 Meaning of a set.

1.2 Methods of describing of a set.

1.2.1 Tabular form

1.2.2 Set builder form

1.3 Types of a set

1.3.1 Finite set, Infinite set, Empty set, Subset, Universal set.

1.3.2 Equal sets, Disjoint sets, Complementary set.

1.4 Operation on Sets

1.4.1 Union of sets

1.4.2 Intersection of sets

1.4.3 Difference of sets.

1.5 De Morgan's Laws (without proof).

1.6 Venn diagram.

1.7 Cartesian product of two sets.

1.8 Idempotent laws, Identity laws, Commutative Laws, Associative laws, Distributive laws, Inverse laws, Domination Laws, Absorption laws, Involution laws.

1.9 Duality.

1.10 Computer Representation of sets and its operations.

1.11 Examples based on above.

Unit-2 Logic

2.1 Introduction.

2.2 Meaning of Statement (Proposition).

2.3 Simple and compound statements.

2.4 Truth values of a statement.

2.5 Law of excluded middle.

2.6 Implication.

2.7 Equivalence of Logical statements.

2.8 Truth Tables and construction of truth tables.

2.9 Converse, Inverse and Contra positive.

2.10 Duality, Laws of logic: Idempotent laws, Commutative laws, Associative laws,

2.11 Identity laws,

Involution laws, Distributive laws, Complement laws, De Morgan's laws.

2.12 Argument: Valid and Invalid arguments.

2.13 Examples based on above.

Unit3 Matrix

3.1 Meaning of a matrix, Order of matrix.

3.2 Types of matrices

3.2.1 Row matrix, Column matrix, Null matrix, Unit matrix

3.2.2 Square Matrix, Diagonal matrix, Scalar matrix,

3.2.3 Symmetric matrix, Skew - symmetric matrix

3.2.4 Transpose of a matrix,

3.3 Definition of Determinants of order 2_{nd} & 3_{rd} and their expansions

3.4 Singular and Non-Singular Matrices

3.5 Algebra of Matrices

3.5.1 Equality of matrices

3.5.2 Scalar Multiplication of matrix

3.5.3 Addition of matrices, Subtraction of matrices

3.5.4 Multiplication of matrices.

3.6 Elementary Row & Column Transformations
3.7 Inverse of Matrix (Using Elementary Transformations)
3.8 Examples based on above.

Unit – 4 Graph Theory

4.1 Introduction to Graph

4.2 Kinds of Graph : Simple, Multi and Pseudo Graph

4.3 Digraph

4.4 Degree of Vertex, Isolated Vertex

4.5 Path, Cycle, A-Cycle,

Reference Books :

Discrete Mathematics & Structures by Satinder Bal Gupta, *University Science Press*

Fundamental Approach to Discrete Mathematics by D. P. Acharjya, Sreekumar, *New Age International Publishers*

Discrete Mathematical Structures by Kolman, Busby, Ross, *Pearson Education Asia*

Matrices by Shantinarayan, *S. Chand & Co. , New Delhi*

Discrete Mathematics by Schaum Series

Discrete Mathematics by K D Joshi

Course Outcome Number	**Course Outcome**
CO1	Find different sets by using set operations like union, intersection or difference of sets.
CO2	Find truth table for the statements using logical operations: Negation, Conjunction, Disjunction, Implication, Double Implication
CO3	Find addition, subtraction or multiplication of matrices, and also find inverse of the matrix.
CO4	Obtain adjacency and incidence Matrix from the graph.

Semester- IV

Paper No. 406

Lab Course Based on Paper No. 403 and 404

Lab Course Based on Paper No. 403
Practicals on MS-Access: (Take sample tables)

1. Write procedure for creating database in Ms-Access.
2. Generate form in Ms-Access and write steps in detail.
3. Establish relationship between tables and write steps for it.

reports using different queries based on multiple tables and write steps in detail for it.

I.Library system:

1. Create database for library system
2. Establish essential relationship between tables
3. Design form for above library system
4. Generate following reports for library system-
    a. List of book with accession numbers
    b. List of books according to author
    c. List of books issued to student
    d. Demand books report of students

II. Design Database System for Payroll management system:

1. Draw ER diagram
2. Create database- contains 1. At least 5 tables 2. At least 3 fields with proper data type
3. Set primary key wherever required
4. Create relationship structure
5. Create form for each table
6. Insert at least 5 records in each table
7. Create different query using query wizard
8. Create at least 3 reports using report wizard (at least 5 records)

III. Design Database System for Hospital management system

1. Draw ER diagram
2. Create database- contains 1. At least 5 tables 2. At least 3 fields with proper data type
3. Set primary key wherever required
4. Create relationship structure
5. Create form for each table
6. Insert at least 5 records in each table
7. Create different query using query wizard
8. Create at least 3 reports using report wizard (at least 5 records)

Course Outcome Number	Course Outcome
CO1	Understand the basic concept of MS Access, and its procedure like creating database, relationship and queries
CO2	Acquire knowledge about the basic concept DBMS using MS Access.
CO3	Able to Creating database files to different system
CO4	Able to Designing Forms and reports
CO5	Draw various Entity relationships Diagram for different management or system
CO6	Able to Establish essential relationship between tables

Lab Course Based on Paper No. 404

Unit-I

1. Programs based on singular and paired tags, formatting tags, list tags,
2. Programs based on marquee, hyperlink, image maps
3. Program based on frame tags

Unit-II

4. Programs based on CSS, cross browser testing
5. Programs based on creating forms, inputting values
6. Programs based on drop down and list box, text area, password
7. Program based on action buttons, radio, checkbox

Unit-III

8. Programs based on control statements
9. Programs based on event handling and built in functions
10. Program based on validations

Unit-IV

11. Programs based on control statements (branching and looping)
12. Programs based on GET and POST method
13. Programs based on database handling
14. Design and develop interactive website using different HTML tags, ASP, Java Script and database handling.

Course Outcome Number	**Course Outcome**
CO1	Understand the basic concept of HTML tags, and its different modules that includes
	Various formatting and other tags used in HTML.
CO2	Acquire knowledge about the basic concept of writing a program.
CO3	Understand concept of HTML and running simple HTML programs.
CO4	Use image mapping, cross browser testing and other tags used in HTML.
CO5	Understand the concept of java script
CO6	To formulate problems and implement programs in HTML and java script.

Semester- IV

Paper No. 407

Mini Project

(Any subject related to Computer Study.)

Course Outcome Number	**Course Outcome**
CO1	Understand the system requirements.
CO2	Understand the system feasibility.
CO3	Understand the system architecture.
CO4	Understand the coding in different languages.
CO5	Understand the different frameworks.
CO6	Understand the system flow & its behavior.

Equivalence of New course with old course:

Paper No.	Old Course	Paper No.	New Course
301	Software Engineering –I	303	System Analysis & Design
302	Object Oriented Programming With C++	304	Object Oriented Programming with C++
303	Programming in Visual Basic		##
304	Marketing Management	302	HRM
305	Financial Services and Banking	301	Cost Accounting
306	Lab Course V (Based on Paper No. 302 & 303)	306	Lab Course Based on Paper No. 304
307	Mini Project	307	Lab Course Based on Paper No. 305 (Using MS-Excel)
401	Operating System		##
402	RDBMS with Oracle	403	DBMS using MS-Access.
403	E-Commerce & Web Designing	404	Web Technology
404	Entrepreneurship Development and Small Business Management	401	Entrepreneurship Development
405	Development of Human Skill	402	Organizational Behaviour
406	Lab Course VI (Based on Paper No. 402,403)	406	Lab Course Based on Paper No. 403 & 404
407	Mini Project	407	Mini Project.

Two chances of examination to be given to the fail students of old course.