DAV UNIVERSITY JALANDHAR

Course Scheme & Syllabus
for
Bachelor of Computer Applications (BCA)
(Three years degree course)
(Program ID-32)
(As per Choice Based Credit System)

1st to 6th SEMESTER

Syllabi Applicable for 2015 Batch

Scheme of BCA

Semester 1

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA110	Computer Fundamentals and Office Automation	Core	4	0	0	**4**
2	CSA111	Algorithm and Programming Logic Design	Core	4	0	0	**4**
3	CSA103	Principles of Digital Electronics	Core	4	0	0	**4**
4	CSA104	Office Automation Laboratory	Core	0	0	4	**2**
5	CSA107	Workshop on MS-Access	Core	0	0	4	**2**
6	ENG151A	Communication Skills	AECC	3	0	0	**3**
7	ENG152	Communication Skills Lab		0	0	2	**1**
8	Generic Elective-I		GE				**4**
	Total						**24**

GE (Generic Elective-I) (Choose one)

S.No	Paper Code	Course Title	L	T	P	Cr.
1	MGT101	Principles & Practices of Management	3	1	0	**4**
2	MGT151A	Fundamentals of Management	4	0	0	**4**
3	MGT155	Fundamentals of Accounting & Finance	4	0	0	**4**

Semester 2

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA105	Principles of Programming and Algorithms using C	Core	4	0	0	**4**
2	CSA106	Web Designing	Core	4	0	0	**4**
4	CSA108	C Programming Laboratory	Core	0	0	4	**2**
5	CSA109	Web Designing Laboratory	Core	0	0	4	**2**
6	MTH190	Mathematical Foundation of Computer Science	Core	4	0	0	**4**
7	EVS100	Environmental studies	AECC	4	0	0	**4**
8	SGS107	Human Values and General Studies	AECC	4	0	0	**4**
	Total						**24**

Semester 3

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA201	Computer Oriented Numerical and Statistical Techniques	Core	4	0	0	**4**
2	CSA202	Object Oriented Programming Structures	Core	4	0	0	**4**
3	CSA203	Database Concepts	Core	4	0	0	**4**
4	CSA204	Computer System Architecture	Core	0	0	4	**4**
5	CSA205	Computer Networks-I	Core	2	0	0	**2**
6	CSA206	Workshop on Corel Draw	SEC	0	0	4	**2**
7	CSA207	Database Concepts Laboratory	Core	0	0	4	**2**
8	CSA208	Object Oriented Programming Structures Laboratory	Core	0	0	4	**2**
	Total						**24**

Semester 4

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA209	Data Structures	Core	4	0	0	**4**
2	CSA210	Programming in C#	Core	4	0	0	**4**
3	CSA211	Information Systems	Core	4	0	0	**4**
4	CSA212	Computer Networks-II	Core	2	0	0	**2**
5	CSA213	Software Engineering	Core	4	0	0	**4**
6	CSA214	Workshop on 2D Animation with Flash	SEC	0	0	4	**2**
7	CSA215	Workshop on Photoshop	SEC	0	0	4	**2**
8	CSA216	Programming in C# Laboratory	Core	0	0	4	**2**
	Total						**24**

Semester 5

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA301	Internet Applications	Core	4	0	0	**4**
2	CSA302	Core JAVA	Core	4	0	0	**4**
3	CSA303	Operating Systems	Core	4	0	0	**4**
4	CSA304	e-Commerce	Core	2	0	0	**2**
5	CSA375	Information Security	Core	4	0	0	**4**
6	CSA306	Workshop on 3-D Modelling	SEC	0	0	4	**2**
7	CSA307	Internet Applications Laboratory	Core	0	0	4	**2**
8	CSA308	Core JAVA Laboratory	Core	0	0	4	**2**
	Total						**24**

Semester 6

S.No	Paper Code	Course Title	Course Type	L	T	P	Cr.
1	CSA309	Computer Graphics and Multimedia	Core	4	0	0	**4**
2	CSA310	Internet Programming with ASP.NET	Core	4	0	0	**4**
3	CSA311	Computer Graphics Laboratory	Core	0	0	4	**2**
4	CSA312	Web Engineering using ASP.NET Laboratory	Core	0	0	4	**2**
5	CSA313	Major Project*	Core	0	0	12	**12**
	Total						**24**

*The Major Project will be of 20 to 24 weeks duration. It will include the development of application/system software. For evaluation, 20% weightage will be given to the synopsis of the project and 80% weightage will be given to the Viva, Project Execution, and Project Report.

Course Title: Computer Fundamentals and Office Automation
Course Code: CSA110
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: This course will enable the student to gain an understanding of the core concepts and technologies which constitute Information Technology. The intention is for the student to be able to articulate and demonstrate a basic understanding of the fundamental concepts of Information Technology and to make them proficient in the use of computer applications such as word, excel and presentation slides relevant to their upcoming project and their reports.

UNIT-A

Computer Fundamentals **12 Hours**

- Block Structure of a Computer, Characteristics of Computers
- Computer generations, Applications of Computers.
- Classification of Computers on the Basis of size and chronology.

Number System

- Bit, byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other, representation of integers and fractions.

Binary Arithmetic

- Addition, subtraction, multiplication and division.

UNIT-B **12 Hours**

Memory Types

- RAM, ROM, Cache and Secondary memory.

Input and Output Devices

- Keyboard, Mouse, Monitor, Light pen, Joystick, Mouse, OCR, OMR, MICR.
- Impact, nonimpact, working mechanism of Drum printer, Dot Matrix printer, Inkjet printer and Laser printer, plotters.

Computer languages and operating System Concepts

- Machine language, assembly language, higher level language, 4GL and introduction to Compiler, Interpreter, Assembler.
- Batch, multiprogramming, time sharing, multiprocessor operating system, online and real time operating system, distributed operating system.

UNIT-C **13 Hours**

DOS

- DOS – History, Internal and External Commands, Batch Files

MS Word

- Salient Features Of MS WORD,

- Creating, saving, opening and printing files, formatting pages, paragraphs and sections, checking Spelling and grammar; creating lists and numbering.
- Headings, styles, fonts and font size. Finding and replacing text, inserting page breaks, page numbers, symbols, images and dates.
- Using tables, header, footer. Using mail merge features.

UNIT-D **8 Hours**

Excel

- Excel Worksheet, Data Entry, Editing, Cell Addressing Ranges
- Copying &Moving Cell Content, Inserting and Deleting Rows and Column, Column Formats, Printing, Creating, displaying charts
- Working with functions - Date and time function, Statistical function, Mathematical and Trigonometric functions, Text function, Logical functions.

MS–Power Point

- Presentation overview, entering information, Presentation creation, opening and saving presentation, using transitions and animations.

Reference Books

1. Sinha, P.K. and Sinha, P., *Foundations of Computing*. New Delhi: BPB First Edition, 2002.
2. Norton Peter , *Introduction to Computers*, McGraw Hill.
3. Rajaraman V, *Fundamentals of Computers*, New Delhi: Prentice Hall of India, Second Edition, 1996.
4. Jain Satish , *MSOffice 2010 Training Guide*, Delhi : BPB Publications, 2010
5. Shelly G. B , Cashman Thomas J., and Vermaat Misty E., *Microsoft Office Word 2007: Complete Concepts and Techniques*, New Delhi:Cengage Learning, 2007
6. Subramanian N, *Introduction to Computers*, Noida, UP, India : Tata McGraw-Hill, 1989
7. Cyganski D, Orr J A,*Information Technology Inside and Outside*, New Jersey USA : Pearson Education 2002.

Course Title: Algorithm and Programming Logic Design
Course Code: CSA111
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: To study the various techniques of problem solving using structured programming and step wise refinement. The objective of the course is to design programs using pseudocode and participate in hands-on debugging, testing, and documenting activities. The course includes principles of programming, the logic of constructing a computer program, and the practical aspects of integrating program modules. Algorithms are used to demonstrate programming as an approach to problem solving.

UNIT-A

Problem solving and Algorithm **12 Hours**

- Concept : problem solving
- Problem solving techniques (Trial & Error, Brain storming, Divide & Conquer)
- Steps in problem solving (Define Problem, Analyze Problem, Explore Solution)
- Algorithms and Flowcharts (Definitions, Symbols)
- Characteristics of an algorithm
- Time complexity: Big-Oh notation, efficiency
- Simple Examples: Algorithms and flowcharts (Real Life Examples)

UNIT-B

Program Design Methodology **12 Hours**

- Procedural versus Object oriented programming
- Introduction to pseudocode
- How to write pseudocode
- Conditionals in pseudo-code

Sequential and Selection Programming Structures

- Sequential execution
- Boolean logic
- Simple selection algorithms
- Multiple selection algorithms
- Nested selection algorithms

UNIT-C **10 Hours**

Repetition Programming Structures

- Repetition statements
- Repetition structures
    - Repetition using the DOWHILE structure
    - Repetition using the REPEAT…UNTIL Structure
    - Counted Repetition
- Repetition algorithms
- Looping
- Nested control structures

UNIT-D **11 Hours**

Advanced Variable Types and Definitions

- Complex variables
- Variable usage

- Arrays
- Arrays and variables
- Pseudo code for common array operations
- Single dimensional array
- Multi dimensional array.

Modularization

- Hierarchy of charts or structure charts
- Further Modularization
- Communication between modules
- Using parameters in program design
- Steps in modularization
- Programming examples using modules
- Steps in Modularization
- Module cohesion
- Module coupling
- Scalability

Reference Books

1. Sprankle, M & J. Hubbard, *Problem solving and programming concepts*, 9th Edition. NJ:Prentice Hall, 2012.
2. Gaddis, T., *Starting out with programming logic and design*, 3rd Edition. Boston:Addison Wesley 2012.
3. Venit, S. & E. Drake, *Prelude to programming: Concepts and design*, 5th Edition. Boston:Addison Wesley, 2011.
4. R.G.Dromy. *How to Solve it by Computer*, 3rd Edition, New Delhi: Pearson Education, 2007.

Course Title: Principles of Digital Electronics

Course Code: CSA103
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: To give knowledge about the various electronics components and digital circuits to the students and designing of various building blocks of computer system. After studying this subject students will be able to easily understand the internal working of digital electronic circuits.

UNIT-A **15 Hours**

Fundamentals

- Definitions of Digital Signals, Digital Waveform
- Digital Logic, Gate propagation delay time
- Digital Operations, Digital Integrated Circuits, Digital IC signal levels.

Number System

- Decimal Number System, Binary Number System,
- Octal Number System, Hexadecimal Number System,
- Conversion from One Number System to another,
- Arithmetic Operation without Changing the Base, 1"s Complement and 2"s Complement.

Logic Gates

- AND, OR, NOT, NAND, NOR, XOR, XNOR, NAND & NOR as Universal Gates, Logic Gates Applications.

UNIT-B **12 Hours**

Boolean Algebra

- Introduction, Theorems, Simplification of Boolean Expression using Boolean
- Algebra,
- SOP & POS Forms, Realization of Boolean Expression using Gates,
- KMaps, Simplification of Boolean Expression using KMaps.

Combinational Logic Circuits

- Half Adder & Half Subtractor, Full Adder & Full Subtractor,
- Parallel Binary Adder, Binary Adder/Subtractor.

UNIT-C **10 Hours**

Combinational Logic Circuits

- Multiplexers & Demultiplexers, Implementation of Boolean equations using Multiplexer and Demultiplexer
- Encoders & Decoders.

Sequential Logic Circuits

- Latch, FlipFlops RS FlipFlop, JK FlipFlop, MasterSlave JK FlipFlop
- Race Condition, Removing RaceCondition, D FlipFlop, T FlipFlop, Applications of FlipFlops

UNIT-D **8 Hours**

Semiconductor memories

- Introduction, Static and dynamic devices, read only & random access memory chips, PROMS and EPROMS Address selection logic.
- Read and write control timing diagrams for ICs.

Reference Books

1. Malvino, *Digital Computer Electronics*, Delhi: McGraw Hill, Second Edition.
2. Mano D. Morris, *Digital Logic & Computer Design*, New Delhi: PHI Second Edition
3. Halkias Millman, *Integrated Electronics*, Delhi: McGraw Hill.
4. Hodges D.A. & Jackson H.G., *Analysis and Design of Integrated Circuits*, New York: International McGraw Hill, , 1983.
5. Ujjenbeck, John, *Digital Electronics: A Modern Approach*, New Delhi: Prentice Hall, 1994

Course Title: Office Automation Laboratory
Course Code: CSA104

L	T	P	Credits	Marks
0	0	4	2	50

- Working of DOS internal & external commands.
- Learning to use MS WORD, MS EXCEL.
- Using MS PowerPoint to make slides and presentations.

Course Title: Workshop on MS Access
Course Code: CSA107

L	T	P	Credits	Marks
0	**0**	**4**	**2**	**50**

- Introduction to the Database Window, Database Objects, Database Terminology
- Creating a Database, Basic Tables
- Using Queries, Using the Auto Form Feature Form Design
- Using the Auto Report Feature, Report Design
- Copying Data, Freezing Columns
- Printing Tables, Printing Reports
- Sorting Records, Using the Filter Sorts, Renaming Columns
- Using the Chart Wizard

Course Title: Communication Skills
Course Code: ENG151A
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
3	0	0	3	75

Course Objective:

- To enhance students' vocabulary and comprehensive skills through prescribed texts.
- To hone students' writing skills.

Learning Outcomes: Students will be able to improve their writing skills as well as will enrich their word power.

Unit – A
Applied Grammar (Socio-Cultural Context)

- Parts of Speech: Noun, Pronoun, Adjective, Verb, Adverb, Preposition, Conjunction, Interjection **5 Hours**
- Tenses (Rules and Usages in Socio-cultural contexts) **6 Hours**
- Modals: Can, Could, May, Might, Will, Would, Shall, Should, Must, Ought to **5 Hours**
- Passives **5 Hours**
- Reported/Reporting Speech **5 Hours**

Unit – B
Reading (Communicative Approach to be Followed)

- J M Synge: Riders to the Sea (One Act Play) **7 Hours**
- Anton Chekhov : Joy (Short Story) **5 Hours**
- Swami Vivekanand : The Secret of Work (Prose) **7 Hours**

Unit – C
Writing

- Paragraph and Essay Writing **5 Hours**
- Letter Writing: Formal and Informal **5 Hours**
- Notice and Email **5 Hours**

References:

a. Books

1. Kumar, Sanjay and PushpLata. *Communication Skills*. India: OUP, 2012.
2. Vandana, Singh R. *The Written Word* by. New Delhi: Oxford University Press, 2008.

b. Websites

1. www.youtube.com (to download videos for panel discussions)
2. www.letterwritingguide.com
3. www.teach-nology.com
4. www.englishforeveryone.org
5. www.dailywritingtips.com
6. www.englishwsheets.com
7. www.mindtools.com

Course Title: Communication Skills Lab
Course Code: ENG152
Course Duration: 30 Hours

L	T	P	Credits	Marks
0	0	2	1	25

Course Objective:

- To improve fluency in speaking English.
- To promotSe interactive skills through Group Discussions and role plays.

Learning Outcomes:

Students will get exposure to speaking through the above mentioned interactive exercises. In addition, they will develop a technical understanding of language learning software, which will further improve their communicative skills

Unit – A Speaking/Listening	**30 Hours**
• Movie-Clippings	10 hours
• Role Plays	10 hours
• Group Discussions	10 hours

Instructions:

1. Each student will prepare a scrap file on any of the topics given by class teacher. Student should be able to justify the contents of his/her Scrap file, which carries the weightage of 10 marks.Marks will be given for originality, creativity and presentation of thoughts.
2. In the end of semester, viva exam will be conducted. Viva will be for 10 marks. Spoken English will be the focus of exam. Examiner will ask questions related to scrap file and other general (non-technical) topics.
3. In the End-term exam, lab activity will carry the weightage of 10 marks.

Acknowledge all the sources of information in your scrap file

References:

Books

1. Gangal, J. K. *A Practical Course In Spoken English.* India: Phi Private Limited, 2012.
2. Kumar, Sanjay and PushpLata. *Communication Skills*. India: OUP, 2012.

Websites

1. www.youtube.com (to download videos for panel discussions)
2. www.englishforeveryone.org
3. www.talkenglish.com
4. www.mindtools.com

Course Title: Principles and Practices of Management

Course Code: MGT101
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
3	1	0	4	100

Course Objective: Student will learn about the development of management theory and will understand the importance of management. The course also aims at explaining the basic functional elements of management.

Learning Outcomes: After completion of course students will be able understand basic management theories and modern practices. Learning will be on the basic roles, skills and functions of management. Students can use and follow modern techniques and strategies of management in the light of ethics and social responsibility.

Unit – A **11 Hours**

- Meaning, nature, scope and importance of management — 2 hours
- Levels of management, Managerial roles — 2 hours
- Principles of functional management — 2 hours
- Evolution of management thought, contributions of F.W Taylor, Henry Fayol, Elton Mayo, Peter Drucker — 3 hours
- Professionalization of Management — 2 hours

Unit – B **12 Hours**

- Planning- Meaning, need & importance, Fundamentals & components of planning — 2 hours
- Planning: Types, process — 2 hours
- Concept of MBO, Advantages & Limitations of MBO — 1 hour
- Decision Making: Concept and process — 2 hours
- Organizing: Concept, significance, processes, Types of organisations — 2 hours
- Span of control. Authority and Responsibility relationships, Delegation — 2 hours
- Decentralization and Departmentation — 1 hour

Unit – C **11 hours**

- Direction & Coordination- Meaning, features, Tools & Techniques — 3 hours
- Leadership- Concept, importance, role & skills — 2 hours
- Communication and supervision — 1 hour
- Controlling- Nature, concept, process, types, scope, importance — 2 hours
- Controlling by exception. Controlling techniques. Key problems in controlling — 3 hours

Unit – D **11 hours**

- Emerging issues in management: American and Japanese styles — 2 hours
- TQM, Six-sigma, MIS, QWL. — 3 hours
- Strategic Management- Concept & process, SWOT analysis, Porter 5-forces model. — 2 hours
- Creativity and innovation. — 1 hour
- Managerial ethics: need, importance, Corporate social responsibility: concept, need, tools — 3 hours

Text Book:

1. Rudani Ramesh, *Principles of Management*, Delhi: Tata, McGraw-Hill Education, 1st Edition 2013

Reference Books:

1. Koontz H & Weihrich, *Essentials of Management*, Delhi: Tata, McGraw-Hill 9th Edition 2013
2. Prasad L M, *Principles and Practices of Management*, New Delhi : Sultan Chand & Sons,
3. Stoner J A F, Freeman R E and Gilbert D R, *Management*, New Delhi: Pearson Education, 6th Edition (2004)

Course Title: Fundamentals of Management

Course Code: MGT151A
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The course aims at developing an appreciation about the principles, functions of management and functioning of professional organisations.

Learning Outcomes: After completion of course students will be able to work professionally in organizations. They should be able to apply the principles and theories of management in the work context.

Unit – A

- Introduction to business management- Definition of management, characteristics of management, management as an art, science and profession, universality of management, levels of management, management process, managerial roles and skills, functional areas of management. **6 Hours**
- Planning- Introduction, planning and plan, strategy and strategic planning, main components of plan, vision, mission, purpose, objectives, goals and targets, Management by Objectives (MBO), **8 Hours**

Unit – B

- Forecasting: Meaning, process and importance, Decision-Making Process and types of decisions. **5 Hours**
- Organizing- Definition, characteristics, organizing process, authority, responsibility, power, delegation, decentralization, departmentation, span of control, organization chart and manuals. Forms of Organization Structure **8 Hours**

Unit – C

- Staffing- Introduction, factors affecting and qualities of good staffing, manpower planning, recruitment and selection. **6 Hours**
- Leadership- Characteristics, importance, style, role, quality and skills of leader. **6 Hours**
- Directing and Co-ordination- meaning, Fundamentals of motivation, motivation theories : Maslow's need hierarchy, Herzberg's Two-Factor Theory of Motivation, McGregor's Theory X and Theory Y. **8 Hours**

Unit – D

- Communicating- Definition, Characteristics, Communication process, importance and types of communication, barriers to communication. **8 Hours**
- Controlling- Meaning, characteristics, scope, control process, types of control, designing effective control systems. **5 Hours**

Text Book:

1. Rudani Ramesh, Principles of Management, Tata, McGraw-Hill Education, 1st Edition

Reference Books:

1. Koontz H & Weihrich, Essentials of Management, 9th Edition 2013
2. Prasad L M, Principles and Practices of Management, Sultan Chand & Sons, New Delhi
3. Stoner J A F, Freeman R E and Gilbert D R, Management, Pearson Education, 6th Edition

Course Title: **Fundamentals of Accounting & Finance**

L	T	P	Credits
4	0	0	4

Course Code: MGT155
Course Duration: 45-60 Hours

Course Objective: To develop the understanding of the framework of basics of accounting and finance.

Learning Outcomes: After the completion of the course students will be able to integrate the basic framework of accounting and finance with their respective domains.

Unit-A (Introduction to basic Accounting)

- Meaning and Objectives of Accounting, Accounting Terminology, Advantages and Disadvantages of Accounting **2 Hours**
- Relationship between Accountancy and Accounting and Book Keeping **2 Hours**
- Users of Accounting Information **1 Hour**
- Relationship of Accounting with other Disciplines **2 Hours**
- Generally Accepted Accounting Principles (Assumptions and Principles) **2 Hours**
- Accounting Standards **2 Hours**
- Double Entry System of Book- keeping **1 Hour**
- Accrual and Cash basis of accounting **3 Hours**
- Accounting Equation- Meaning and Procedure of Developing Accounting
- Equation **4 Hours**

Unit-B (Journal, Ledger, Trial Balance and Final accounts)

- Journalizing- Meaning and Rules of Debit and Credit, Format of Journal, Identification of Transactions, Recording of transactions in Journal **3 Hours**
- Distinction between Journal and Ledger, Preparation of Ledgers from Journal, Posting, Balancing of Accounts **3 Hours**
- Meaning, Objectives and Advantages of Trial balance, Meaning and Methods of Preparation of Trial Balance **5 Hours**
- Financial Statements- Meaning and Usefulness of Financial Statements, Recognition of Assets, Liabilities, Income and Expenses **2 Hours**
- Preparation of Trading Account, Profit and Loss Account and Balance Sheet **2 Hours**

Unit-C (Business finance, Sources of finance, Cost of capital, Investment decisions)

- Business Finance: Conceptual foundations , finance function in business , scope and objectives , Relation of finance with other business functions**.** **3 Hours**
- Source of finance: Equity and preference shares. Debentures convertible debentures – Relative merits and limitations **3 Hours**
- Cost of capital: Cost of debt ,Cost of preference share capital , cost of equity , Aggregate weighted average cost of capital. **3 Hours**

- Capital Structure: Optimum Capital Structure ,Determinants – Financial leverage – concept, measurement and significance. **4 Hours**

Unit-D

- Investment decisions – importance, difficulties, determining cash flows, methods of capital budgeting **3 Hours**
- Working Capital Management: Cash securities, receivables and inventory management – management of working capital – kinds of working capital - Determinants of Working Capital. **5 Hours**
- Dividend policy and decisions: Influencing factors – forms of dividend.– theories of dividend, Walter, Gordon and MM models, dividend and uncertainty, relevance of dividend, dividend policy in practice, forms of dividends, stability in dividend, corporate dividend behavior . **5 Hours**

Text Book:

1. Tulsian, P. C. Financial Accounting. New Delhi: Pearson Education, 2013.
2. Srivastava, R. and Misra, R. Financial Management, Oxford University Press,2013.

Reference Books:

1. Gupta, R.L and Radhaswamy, M. Financial Accounting. New Delhi: Sultan Chand and Sons.
2. Bhattacharyya, A. K. Financial Accounting. New Delhi: PHI Learning, 2nd Edition
3. Chandra, P. Financial Management: Theory and Practice. Tata McGraw HillEducation, 7th Edition.
4. Jain, K., Khan, Y. M., Jain, K. P. and Khan, Y. M. Basic Financial Management. Tata McGraw-Hill Education, 2nd Edition

Course Title: Principles of Programming and Algorithms using C
Course Code: CSA105
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The objective of this course is to help the students in finding solutions to various real life problems and converting the solutions into computer program using C language (structured programming). Students will learn to write algorithm for solutions to various real-life problems. Converting the algorithms into computer programs using C language.

UNIT-A **15 Hours**

Logic Development and Program Development Tools

- Data Representation, Flowcharts, Problem Analysis
- Decision Trees/Tables, Pseudo Code and Algorithms,
- Program Debugging, Compilation and Execution.

Fundamentals

- Character Set, Identifiers and Key Words, Data Types
- Constants, Variables, Expressions, Statements, Symbolic Constants.

Operations and Expressions

- Arithmetic Operators, Unary Operators, Relational Operators,
- Logical Operators, Assignment and Conditional Operators, Library functions.

UNIT-B **12 Hours**

Data Input and Output

- Single Character Input, Single Character Output, Entering Input Data
- More About Scan Functions, Writing Output Data, More About Print Functions
- Gets and Puts Functions, Interactive Programming.

Control Structures

- Introduction, Decision Making with If – Statement, If Else and Nested If,
- While And Do-While, For Loop.
- Jump Statements: Break, Continue, Goto, Switch Statement.

Functions

- Introduction To Functions, Function Declaration, Function Categories
- Standard Functions, Parameters And Parameter Passing, Pass – By Value/Reference
- Recursion, Global and Local Variables, Storage Classes.

UNIT-C **10 Hours**

Arrays

- Introduction to Arrays, Array Declaration, Single and Multidimensional Array, Memory Representation, Matrices, Strings, String Handling Functions.

Structure and Union

- Declaration of Structure, Accessing Structure Members, Structure Initialization, Arrays of Structure, Nested Structures, Unions.

UNIT-D **8 Hours**

Pointers

- Introduction To Pointers, Address Operator And Pointers, Declaring and Initializing Pointers,
- Assignment through Pointers, Pointers and Arrays.

Files

- Introduction, Creating a Data File, Opening and Closing a Data File, Processing a Data File.

Preprocessor Directives

- Introduction and Use, Macros, Conditional Preprocessors, Header Files

Reference Books

1. Kanetkar Yashvant P, *Let us C*, New Delhi :BPB Publications, Seventh Edition (2007).
2. Balagurusami E, *Programming in ANSI C*, New Delhi: Tata McGraw Hill, Fourth Edition (2010).
3. Gottfried Byron S., *Programming in C*, New Delhi: McGraw Hills, Second Edition 1996.
4. Kernighan & Richie,*The C Programming Language*, New Delhi: PHI Publication, Second Edition(2009) .
5. Gottfriet Bryon, *Schaum Outline Series, Programming in C*, New Delhi: McGraw Hills, 2010

Course Title: Web Designing
Course Code: CSA106
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: This course will enable the student to build and publish web sites using Dreamweaver, a popular visual web site production and management program, using HTML, DHTML, CSS and PHP. This course will enable the student to build and publish web sites using Dreamweaver, a popular visual web site production and management program.

UNIT-A **15 Hours**

Introduction to Web Development

- Website, Webpage, Static Website, Dynamic Website.

Introduction to HTML/DHTML:

- HTML Basics, HTML Elements (Tags), Structure of HTML Program, Attributes, Headings, Paragraphs
- Formatting, Links, Images, Tables, Lists, Forms, Frames, Where to put Tables, Lists, Images, Forms
- CSS in DHTML, Implementation of Web Pages using CSS

UNIT-B **12 Hours**

Dreamweaver

- Understanding Workspace Layout, Managing Websites, Creating a Website, Using Dreamweaver Templates
- Adding New WebPages, Text and Page Format, Inserting Tables, Lists, Images, Adding Links.

UNIT-C **10 Hours**

Introduction to PHP

- PHP Environment, Syntax Overview, Variable Types, Constants, Operator Types, Decision Making
- Arrays, Strings, Web Concepts, GET & POST
- File Inclusion, Files & I/O, Functions, Cookies, Sessions, Sending Emails, Uploading, Coding Standards.
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UNIT-D **8 Hours**

Purchasing a Domain Name & Web Space

- Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server

Reference Books

1. Powell Thomas, *HTML & CSS: The Complete Reference*, New Delhi: McGraw-Hill, Fifth Edition (2010).
2. Andy Harris, *HTML, XHTML and CSS All in One For Dummies*, Delhi: Willey ,Second Edition (2010).
3. Lerdorf Rasmus, Tatroe Kevin, MacIntyre Peter, *Programming PHP*, Delhi: O'Reilly Media, 2013

.

4. Ullman Larry, *PHP for the World Wide Web,Visual QuickStart Guide*. New Delhi: Peachpit Press, fourth edition (2011)

L	T	P	Credits	Marks
0	0	4	2	50

Course Title: C Programming Laboratory
Course Code: CSA108
Implementation of C programming concepts:

- Control Structures, Loops, Arrays, Strings
- Functions, Structures, Union, Files, etc.

Course Title: Web Designing Laboratory

Course Code: CSA109

L	T	P	Credits	Marks
0	0	4	2	50

- Web designing using HTML, DHTML, CSS, and PHP.

Course Title: Mathematical Foundation of Computer Science

Course Code: MTH190
Course Duration: 45 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The syllabus of this course is specially designed for the beginners in computer science with the first exposure to mathematical topics essential to their study of computer science or digital logic. Topics like algorithm complexity will help them in learning the important concepts of C language and algorithm design and analysis.

UNIT-A **15 Hours**

Matrix Algebra

- Matrix Algebra Matrices, Types of Matrices, Operations on Matrices, and Properties Of Determinants (Statement Only)
- Minors, Cofactors, Adjoint and Inverse of a Matrix, Elementary Transformations in a Matrix Rank of a Matrix,
- Solution of Simultaneous Equations using Crammer'S Rule and Matrix Inversion Method. Characteristics of Polynomial
- Eigen Values, Nature of Eigen values, Certain Types of Matrices, Cayley – Hamilton Theorem.

UNIT-B **12 Hours**

Differentiation and Integration

- Laws of Derivative, Chain Rule
- Differentiation Using Log, Repeated Derivatives, Derivatives of Implicit Functions Integration of Algebraic, Logarithmic and Exponential Function, Integration of Functions Using Partial Fraction (Simple Form Using Properties)
- Integration of Functions by Parts, Definite Integral

UNIT-C **10 Hours**

Statistics

- Introduction to Statistics, Measures of Central Tendency Mean, Median and Modes
- Measures of Dispersion, Mean Deviation, Standard Deviation and Coefficient of Variation.

Applications of Logarithms

- Problems Related To Compound Interest, Depreciation and Annuities.

UNIT-D **8 Hours**

Algorithms and Complexity

- Algorithms, Searching Algorithms, Sorting
- Growth of Functions, Big O Notation, Big Omega and Big Theta Notation
- Complexity of Algorithms, Mathematical Induction, The Basic of Counting, The Pigehole Principle

Reference Books

1. Bali N.P, *Text Book of Engineering Mathematics,* Lakshmi Publications, fifth edition (2012)
2. Grimaldi Ralph P, *Discrete and Combinational Mathematics*, Delhi :Pearson Education, Forth Edition (2011)
3. Rajaraman, *Computer Oriented Numerical Methods*, New Delhi :PHI Publications, Third Edition (2010).
4. Sancheti D.C., *Business Mathematics*, New Delhi: Sultan Chand & Sons, Eleventh Edition (2012)
5. Tremblay J. P & Manohar R. P, *Discrete Mathematical Structures with Applications to Computer Science*,Delhi: MGH Publications, Ninth Edition(2010).

Course Title: Environmental studies
Course Code: EVS100
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: This course aims at understanding the students in aspects of environmental problems, its potential impacts on global ecosystem and its inhabitants, solutions for these problems as well as environmental ethics which they should adopt to attain sustainable development.

Unit-A

The multidisciplinary nature of environmental studies **2 Hours**

Definition, scope and importance, Need for public awareness

Natural Resources: Renewable and non-renewable resources: **8 Hours**

Natural resources and associated problems.

(a) **Forest resources:** Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

(b) **Water resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

(c) **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

(d) **Food resources:** World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

(e) **Energy resources:** Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

(f) **Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Ecosystem: **4 Hours**

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem
b. Grassland ecosystem

c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Unit- B

Biodiversity and its conservation **4 Hours**

- Introduction – Definition: Genetic, Species and Ecosystem Diversity
- Bio-geographical classification of India
- Value of biodiversity: Consumptive use, Productive use, Social, Ethical, Aesthetic and Option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity, global and national efforts.

Environmental Pollution **8Hours**

- Definition, causes, effects and control measures of:

a. Air pollution
b. Water pollution
c. Soil pollution
d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear pollution

- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

Unit- C

Social Issues and the Environment **7 Hours**

- Population growth, variation among nations, Population explosion – Family Welfare Programmes.
- Environment and human health,
- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation

- Consumerism and waste products
- Environmental Laws: The Environment Protection Act, 1986; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and control of Pollution) Act 1974; The Wildlife Protection Act, 1972; Forest Conservation Act, 1980.
- Issues involved in enforcement of environmental legislation
- Public Awareness

Unit -D

Human Population and Environment **5 Hours**

- Population Growth and Variations among Nations
- Population Explosion
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

Field Work **5 Hours**

- Visit to a local area to document environmental assets river/ forest/ grassland/hill/mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-Pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

Suggested Readings:

1. Odum, EP. *Basic Ecology*. Japan: Halt Saundurs, 1983.
2. Botkin, DB, and Kodler EA. *Environmental Studies: The Earth as a living planet.* New York: John Wiley and Sons Inc., 2000.
3. Singh, JS, Singh, SP, and Gupta SR. Ecology, *Environment and Resource Conservation.* New Delhi: Anamaya Publishers, 2006.
4. De, AK. *Environmental Chemistry*. New Delhi: Wiley Eastern Ltd., 1990.
5. Sharma, PD. *Ecology and Environment*. Meerut Rastogi Publications, 2004

Course Title: Human Values and General Studies

Course Code: SGS107
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objectives

- To sensitize students about the role and importance of human values and ethics in personal, social and professional life.
- To enable students to understand and appreciate ethical concerns relevant to modern lives.
- To prepare a foundation for appearing in various competitive examinations
- To sensitize the students about the current issues and events of national and international importance
- To provide opportunity to the students to study inter disciplinary subjects like Geography, Science, Economy, Polity, History, International Relations etc.

Unit - A
Human Values

1. **Concept of Human Values:** Meaning, Types and Importance of Values. **2 Hours**
2. **Value Education :** Basic guidelines for value education **2 Hours**
3. **Value crisis and its redressal** **1 Hours**

Being Good and Responsible

1. Self Exploration and Self Evaluation **2 Hours**
2. Acquiring Core Values for Self Development **2 Hours**
3. Living in Harmony with Self, Family and Society **3 Hours**
4. Values enshrined in the Constitution: Liberty, Equality Fraternity and Fundamental Duties. **3Hours**

Unit - B
Value – based living

1. Vedic values of life **2 Hours**
2. *Karma Yoga* and *Jnana Yoga* **2 Hours**
3. *Ashta Marga* and *Tri-Ratna* **2 Hours**

Ethical Living:

1. Personal Ethics **2 Hours**
2. Professional Ethics **3 Hours**
3. Ethics in Education **2 Hours**

Unit-C
General Geography
World Geography **3 Hours**

The Universe, The Solar System, The Earth, Atmosphere, The World we live in, Countries rich in Minerals, Wonders of the World, Biggest and Smallest.

Indian Geography **3 Hours**

Location, Area and Dimensions, Physical Presence, Indian States and Union Territories, Important sites and Monuments, Largest-Longest and Highest in India.

General History **3 Hours**

Glimpses of India History, Ancient Indian, Medieval India, Modern India, Various Phases of Indian National Movement, Prominent Personalities, Glimpses of Punjab history with special reference to period of Sikh Gurus

Glimpses of World History **3 Hours**

Important Events of World History, Revolutions and Wars of Independence, Political Philosophies like Nazism, Fascism, Communism, Capitalism, Liberalism etc.

Indian Polity: Constitution of India **3 Hours**

Important Provisions, Basic Structure, Union Government, Union Legislature and Executive, State Government: State Legislature and Executive, Indian Judiciary, The Election Commission, Panachayati Raj System, RTI etc.

General Economy **3 Hours**

The process of liberalization, privatization, globalization and Major World Issues, Indian Economy, Indian Financial System, Major Economic Issues, Economic Terminology.

Unit-D

General Science **3 Hours**

General appreciation and understandings of science including the matters of everyday observation and experience, Inventions and Discoveries

Sports and Recreation **3 Hours**

The World of Sports and recreation, Who's Who is sports, Major Events, Awards and Honours. Famous personalities, Festivals, Arts and Artists

Current Affairs **3 Hours**

National and International Issues and Events in News, Governments Schemes and Policy Decisions

Miscellaneous Information

Who is who **2 Hours**

Books and Authors, Persons in News, Awards and Honours, Abbreviations and Sports

References:

1.Human Values, A N Tripathi, New Age International Publishers, New Delhi, Third Edition, 2009

2.Professional Ethics, R. Surbiramanian, Oxford University Press, New Delhi, 2013.

3. Human Values and Professional Ethics, Rishabh Anand, Satya Prakashan, New Delhi, 2012

4. Human Values and Professional Ethics, Sanjeev Bhalla, Satya Prakashan, New Delhi, 2012.

5. Human Values and Professional Ethics, Ritu Soryan Dhanpat Rai & Co. Pvt. Ltd., First Edition, 2010.

6. Human Values and Professional Ethics by Suresh Jayshree, Raghavan B S, S Chand & Co. Ltd. , 2007.

7.Human Values and Professional Ethics, Yogendra Singh, Ankur Garg, Aitbs publishers, 2011.

8. Human Values and Professional Ethics, Vrinder Kumar, Kalyani Publishers, Ludhiana, 2013.

9. Human Values and Professional Ethics, R R Gaur, R. Sangal, GP Bagaria, Excel Books, New Delhi 2010.

10. Values and Ethics, Dr. Bramwell Osula, Dr. Saroj Upadhyay, Asian Books Pvt. Ltd., 2011.

11. Indian Philosophy, S. Radhakrishnan, George Allen & Unwin Ltd., New York: Humanities Press INC, 1929.

12. Essentials of Hinduism, Jainism and Buddhism, A N Dwivedi, Books Today, New Delhi – 1979

13. Dayanand : His life and work, Suraj Bhan, DAVCMC, New Delhi – 2001.

14. Esence of Vedas, Kapil Dev Dwivedi, Katyayan Vedic Sahitya Prakashan, Hoshiarpur, 1990.
15. Vedic Concepts, Prof. B B Chaubey, Katyayan Vedic Sahitya Prakashan, Hoshiarpur, 1990.
16. Advance Objective General Knowledge, R. S. Aggarwal, S. Chand Publisher (2013)
17. Concise General Knowledge Manual 2013, S. Sen, Unique Publishers,2013
18. Encyclopedia of General Knowledge and General Awareness by R P Verma, Penguin Books Ltd (2010)
19. General Knowledge Manual 2013-14, Edgar Thorpe and Showick Thorpe, The Pearson, Delhi.
20. General Knowledge Manual 2013-14, Muktikanta Mohanty, Macmillan Publishers India Ltd., Delhi.
21. India 2013, Government of India (Ministry of Information Broadcasting), Publication Division, 2013.
22. Manorama Year Book 2013-14, Mammen Methew, Malayalam Manorama Publishers, Kottayam, 2013.
23. Spectrum's Handbook of General Studies – 2013-14, Spectrum Books (P) Ltd., New Delhi

CURRENT AFFAIRS

Magazines

Economic and Political Weekly, Yojna, the Week, India Today, Frontline, Spectrum.
Competition Success Review, Competition Master, Civil Services Chronicle, Current Affairs, World Atlas Book

Newspapers

The Hindu, Times of India, The Hindustan Times, The Tribune

Course Title: Computer Oriented Numerical and Statistical Techniques
Course Code: CSA201
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The course aims at discussing various significant and fundamental concepts to inculcate in the students an adequate understanding of the application of Numerical Algorithms and Statistical Methods.

UNIT - A **15Hours**

Errors and Sources of Propagation for Errors

- Floating Point Representation of Numbers
- Arithmetic Operations with Normalized Floating Point Numbers and Their Consequences
- Error in Number Representation Pitfalls in Computing

Iterative Methods

- Zeros of aSingle Transcendental Equation and Zeros of Polynomial Using Bisection
- False Position, Newton Raphson, Convergence of Solution
- Simultaneous Linear Equations, Solution Of Simultaneous Linear Equation
- Gauss Elimination Method And Pivoting, ILL Conditioned Equations And Refinement Of Solutions
- Gauss Siedel Iterative Methods

UNIT – B **12 Hours**

Numeric Differentiation and Integration

- Numerical Differentiation Using Interpolation Method
- Numerical Integration, Trapezoidal Rule
- Simpson's 1/8 Rule, Simpson 3/8 Rule.

Numerical Solution of Ordinary Differential equations

- Euler Method, Runga Kutta Method, Predictor Corrector Method.

UNIT – C **08 Hours**

Interpolation Curve Fitting and Cubic Splines

- Lagrange's Interpolation, Newton Interpolation
- Linear Regression, Polynomial Regression, Exponential Regression

UNIT – D **10 Hours**

Introduction to Statistics

- Meaning, Scope, Collection, Classification of Data.
- Application Based on and Processing Logic of Measures of Central Tendency, Dispersion.

Bivariate Data

- Correlation, Meaning, Type of Correlation, Correlation and Causation, Methods of Studying Correlation,
- Algorithm to Compute Karl Pearson's Correlation and Rank Correlation. Applications Based On Correlation.

Linear Regression

- Processing Logic of and Numerical Based on Fitting of Regression Lines (Using Least Square Method)

Reference Books

1. Rajaraman V, *Computer Oriented Numerical Methods*, Prentice Hall, India, 1993
2. Gupta S.C, *Fundamental of Statistics*,Himalayas Publication House,2007
3. Gupta & Kapoor,*Applied Statistics*,Sultan Chand & Sons, 2007
4. Gupta S.P, *Statistical Method*, Sultan Chand & Sons, 2009

Course Title: Object Oriented Programming Structures
Course Code: CSA202
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: This course will expose you to the features of object oriented programming concepts such as inheritance, encapsulation, polymorphism, exception and file handling, which help you design software.

UNIT - A **12 Hours**

Introduction

- Evolution Of OOP, OOP Features of C++
- Characteristics of Object Oriented Language – Objects, Classes, Inheritance, Reusability, User Defined Data Types, Polymorphism, Overloading
- Comparison of C with C++.

Class Concepts

- Class and Objects, Inline Functions, Static Data Members and Member Functions
- Constructors and Destructors
- Pass By Value Vs. Pass By Reference
- Local and Global Class, Nested and Empty Class, Preprocessor Directives, Namespace.

UNIT– B **11 Hours**

Console I/O

- Hierarchy of Console Stream Classes
- Unformatted and Formatted I/O Operations, Manipulators

Operator Overloading

- Overloadable Operators, Overloading Unary and Binary Arithmetic and Relational Operators
- Overloading Subscript, Array, Insertion, Extraction, New and Delete Operators.

UNIT– C **11 Hours**

Friend Function and Operator Overloading

- Friend Function, Function Overloading
- Overloading Operators, Overloading Unary and Binary Operators

Inheritance

- Derivation Rules, Different Forms of Inheritance
- Virtual Base Class
- Roles of Constructors and Destructors in Inheritance.

UNIT– D **11 Hours**

Virtual Functions

- Virtual Functions and Their Needs, Pure Virtual Function
- Virtual Destructor, Virtual Derivation, Abstract Class.

File Handling

- Hierarchy of File Stream Classes, Opening and Closing Files

- File Modes, Testing for Errors
- File Pointers and Their Manipulations, ASCII &Binary Files
- Sequential and Random Access Files

Reference Books:

1. Stroustrup Bjarne, *The C++ Programming Language*, New Delhi: Addison-Wesley Professional,2000
2. Lafore Robert, *Object Oriented Programming in C++*. Delhi: Sams Publishing,2000
3. Balaguruswami E, *Object Oriented Programming In C++*, New Delhi: Tata McGrawHill ,2006
4. Lippman, Tom Weiss, *C++ Primer*, New Delhi: Addison Wesley,2005
5. Scildt Herbert ,*C++The Complete Reference*, New Delhi: Tata McGrawHill,2007

Course Title: Database Concepts
Course Code: CSA203
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Objectives: This course covers fundamentals of database architecture, database management systems, and database systems, Principles and methodologies of database design, and techniquesfor database application development.

UNIT – A **10 Hours**

An Overview of DBMS

- Concept of File Processing Systems and Database Systems
- Database Administrator and his Responsibilities
- Physical and Logical Data Independence

Three level Architecture of Database System

- The External Level
- Conceptual Level
- The Internal Level

UNIT-B **12 Hours**

Introduction to Data Models

- Entity Relationship Model, Hierarchical
- Network and Relational Model
- Comparison of Network, Hierarchical and Relational Model
- E–R Diagram
- Different Keys Used In a Relational System, Sql

UNIT – C **10 Hours**

Database Protection

- Recovery
- Concurrency Management
- Database Security
- Integrity and Control
- Disaster Management

Normal Forms

INF, 2NF, 3NF, BCNF, 4th NF, 5th NF, and DBTG

UNIT – D **13 Hours**

Distributed databases

- Structure of a Distributed Database, Design of Distributed Databases

SQL *PLUS

- Introduction to SQL–DDL, DML, DCL, Join Methods & Sub Query
- Union Intersection, Minus, Tree Walking, Built in Functions
- Views, Security Amongst Users, Sequences, Indexing,

Reference Books:

1. Desai Bipin C, *An Introduction to Database System*, New Delhi: Galgotia Publications, 2010
2. Date C.J, *An Introduction to Data Base Systems*, New Delhi: Narosa Publications, Eighth Edition,2012
3. Korth Henry F, *Database System Concepts*, New Delhi: McGraw Hill, 2010
4. Ullman, *Principles of Database Systems*, New Delhi: Galgotia Publications ,2010.
5. Coronel, Moris, Rob, *Database Systems: Design, Implementation, and Management*, New Delhi South-Western, Ninth Edition (2009)

Course Title: Computer System Architecture
Course Code: CSA204
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The objective of the course is to provide students with a solid foundation in computer design. Examine the operation of the major building blocks of a computer system Syllabus includes instruction set architecture, control design, memory hierarchy, input/output and communication.

UNIT - A **15 Hours**

Introduction to Computer Organization

- Introduction to Computer and CPU
- (Computer Organization, Computer Design and Computer Architecture), Stored Program Concept- Von Neumann Architecture.

Register Transfer and Micro operations

- Introduction to Registers, Register Transfer Language
- Data movement among Registers and Memory

Arithmetic Micro operations

- Binary Adder, Binary Adder-Subs tractor, Binary Incrementer

Common Bus System

- Introduction to Common Bus System, Types of Buses(Data Bus, Control Bus, Address Bus),
- 16 bit Common Bus System--Data Movement among registers using Bus

UNIT– B **12 Hours**

Basic Computer Instructions

- Introduction To Instruction, Types Of Instructions (Memory Reference, I/O Reference And Register Reference)
- Instruction cycle, Instruction Formats (Direct and Indirect Address Instructions, Zero Address, One Address, Two Address and Three Address Instructions), Addressing Modes

Programming the Basic Computer

- Introduction, Machine Language
- Assembly Language
- Subroutines

10 Hours

UNIT– C

Computer Organization

- Instruction codes, Common Bus System
- Interrupt: Types of interrupt, Interrupt Cycle
- CISC and RISC

Memory Organization

- Memory Hierarchy, Types of Memory: RAM and ROM Chips,
- Associative Memory, Cache Memory, Auxiliary Memory, Virtual Memory
- Memory Address Map, Memory Connection to CPU.

UNIT– D **8 Hours**

Input Output Organization

- Input output Interface: I/O Bus and Interface Modules, I/O versus Memory Bus
- Memory Mapped I/O versus Isolated Mapped I/O
- Asynchronous Data Transfer: Strobe Control, Handshaking
- Direct Memory Access (DMA).

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Reference Books:

1. M.M. Mano,Computer System Architecture, Prentice Hall of India.
2. M.M. Mano, Digital Logic and Computer Design, Prentice Hall of India I.
3. Hayes,Computer Architecture and Organization,McGrawHill International Edition.
4. A.S. Tannenbaum, Structured Computer Organization, Prentice Hall of India
5. B. Brey,The Intel Microprocessors, Pearson Education.
6. M.E. Sloan, Computer Hardware and Organization, 2nd Edition, Galgotia, Pvt. Ltd.

Course Title: Computer Networks-I
Course Code: CSA205
Course Duration: 25-30 Hours

L	T	P	Credits	Marks
2	0	0	2	50

Course Objective: This course provides knowledge about various types of Network, Network Topologies, and Protocols.

UNIT—A **9 Hours**

Introduction:

- Uses of Computer Networks, Network Hardware, Network Software
- Seven-Layer OSI Architecture of ISO, Concepts of Layer Protocols and Layer Interfaces
- TCP/IP Reference Model, Comparison of OSI &TCP/IP Reference Models
- Physical Layer: Transmission Media , Telephone System (Structure, Trunks , Multiplexing and Switching
- Wireless Transmission

UNIT—B **6 Hours**

Data Link Layer:

- Design Issues
- Error Detection and Correction
- Elementary Data Link Protocols

7 Hours

UNIT—C

Data Link Layer

- Sliding Window Protocols
- Medium Access Sub Layer: The Channel Allocation
- IEEE standards 802 for LA and MAN.

Network Layer

- Design issues
- Routing Algorithms
- Congestion Control Algorithms, IP Protocol

8 Hours

UNIT—D

Network Layer

- IP Address, Sub Nets
- Transport Layer, Transport Services, Elements of Transport Protocols, TCP Service
- Model, Protocol, Header
- Router Operation, Router Configuration, Internetworking
- IP Protocol, IPV6 (an overview), Network Layer in ATM Network

Reference Books

1. Tananbaum A.S. and David J. Wetherall,*Computer Networks*, Delhi: Pearson, Fifth Edition 2010.
2. Stalling W, *Data & Computer Communications*, New Delhi: PHI,Ninth Edition 2010.
3. B. Forouzan, *Data Communication and Networking*, New Delhi: Tata McGraw Hill July 2010.

Course Title: Workshop on Corel Draw
Course Code: CSA206

L	T	P	Credits	Marks
0	0	4	2	50

Course Objective: This course will be able to understand the fundamental of Corel draw and can able to create, pamphlets, banners, new paper, books.

UNIT—A

- Corel Draw- An overview, menu and tools
- Drawing lines, shapes, inserting –pictures ,objects ,tables and templates

UNIT—B

- Adding special effects, Exporting drawings
- Outlining and Filling Objects
- Inserting symbols and Clip arts

UNIT—C

- Working in Corel Draw Presentation, Adjusting the position
- Resizing, Positioning. Merging, Color Shades and Shadows
- Working with advanced effects, Special interactive effects.

UNIT—D

- Creating- Business cards, Pamphlets, Banners, Newspaper, Books.

Reference Books

1. Bain Steve, *Corel Draw 12. The official Guide* , New Delhi: Tata McGraw Hill, 2010
2. Miller Deborah, *CorelDRAW Bible*. New Delhi: Wiley,1999

Course Title: Database Concepts Laboratory
Course Code: CSA207

L	T	P	Credits	Marks
0	0	4	2	50

Implementation of SQL

- DDL, DML, DCL, TCL
- Practice of PL/SQL.

Course Title: Object Oriented Programming Structures Laboratory
Course Code: CSA208

L	T	P	Credits	Marks
0	0	4	2	50

- Implementation of OOP concepts using C++
- Write program in 'C++' language
- Using input and output statements
- Using control statements.
- Using functions.
- Using array
- Using Classes and implementation of Constructor and Destructor.
- Using files.
- Using OOP's Concepts (Inheritance, Polymorphism, Encapsulation, Friend and Static Functions, Exception Handling)

Course Title: Data Structures
Course Code: CSA209
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The emphasis of this course is on the organization of information, the implementation of common data structures such as lists, stacks, queues, trees, and graphs.

UNIT - A **10 Hours**

Preliminaries

- Introduction to Data Structures: Primitive and Composite, Various Data Structures
- Common Operations on Data Structures, Algorithm Complexity
- Big O Notation, Time, Space Tradeoff Between Algorithms
- Complexity of Algorithms, Records and Pointers.

Arrays

- Arrays Defined, Representing Arrays in Memory, Various Operations on Linear Arrays
- Multi Dimensional Arrays, Records, Matrices, Sparse Matrices
- Linear Search, Binary Search
- Insertion Sort, Selection Sort, Bubble Sort, Merge Sort
- String, Representation and Manipulation

UNIT– B **12 Hours**

Linked Lists

- Types of Linked Lists, Representing Linked Lists in Memory
- Advantage of Using Linked Lists Over Arrays
- Various Operation on Linked Lists

Stacks

- Description of Stack Structure, Implementation of Stack Using Arrays and Linked Lists
- QuickSort Technique to Sort an Array, Parenthesis Checker.

Queues

- Implementation of Queue Using Arrays and Linked Lists
- De-Queues, Priority Queues and Their Implementation, Aapplications of Queues.

UNIT– C **12 Hours**

Trees

- Description of Tree Structure and Its Terminology, Binary Search Tree
- Implementing Binary Search Tree Using Linked Lists
- Various Operations on Binary Search Trees

Heaps

- Description of Heap Structure, Implementing Heaps Using Arrays
- Various Operations on Heaps, Applications of Heaps
- Heap Sort Technique to Sort an Array

UNIT– D **11 Hours**

Graphs

- Representation of Graphs And Applications: Adjacency Matrix, Path Matrix
- Warshall's Algorithm, Linked Representation of A Graph
- Traversing aGraph, DFS and BFS.

Files

- Operations on Files, Types of Files
- File Organizations: Sequential Files, Indexed Sequential File, Directed Files and Multikey Files
- File Performance Criteria and Terms.

Reference Books:

1. Lipschutz Seymour, *Theory and Problems of Data Structures*, Schaum Outline Series, New Delhi: Tata McGrawHill Book Company, 2001.
2. Mark Allen Weiss, *Data Structures and Algorithm Analysis In C* , Mexico City:Addison Wesley, (An Imprint of Pearson Education),.New Delhi: Prentice Hall of India Pvt. Ltd, 1993.
3. Esakov Jeffery, Weiss Tom, *Data Structures: An Advanced Approach Using C*, New Delhi: Prentice Hall International, Inc, 2007.
4. Trembley and Sorenson,*An Introduction to Data Structures with Application*, New York :
   McGraw Hill Company, 1984.
5. Tanenbaum, *Data Structures using C*, New Delhi: Pearson Education, *2009*.

Course Title: Programming in C#
Course Code: CSA210
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: This course provides the knowledge about creating windows forms, namespaces, assemblies, handling exceptions, casting, memory management and pointers. They also learn the concepts of threads and database connectivity.

UNIT-A

Introduction to .NET Environment **10 Hours**

- .Net Architecture, The Relationship of C# To .Net , The Common Language Runtime , Advantages of Managed Code, Use of Attributes, Deployment.
- The Common Language Runtime, Framework Base Classes, User and Programs Interface, Visual Studio .NET, .NET Languages, Benefits of The .NET Approach

UNIT-B

C# Fundamentals **13 Hours**

- C# Basics , Variables , Predefined Data Types : Value Types and Reference Types , CTS Types ,Conditional Statements ,Loops , Jump Statements , Enumerations
- Arrays , Using Statement , Namespace , Aliases , The Main() Method , Multiple Main Methods , Passing Arguments To Main() . More on Compiling C# Files, Console I/O, Using Comments.
- The C# Preprocessor Directives,C# Programming Guidelines. Objects and Type: Classes and Structs, Partial Classes, Static Classes, The Object Class Inheritance: Types of Inheritance, Virtual Methods, Hiding Methods, Calling Base Versions of Functions.
- Sealed Classes and Methods, Constructors of Derived Classes , Modifiers, Interfaces , Derived Interfaces
- Differencebetween C++ and C#, Difference between Java and C#.

UNIT-C **10 Hours**

Operators and Casts

- Operator Shortcuts, The Ternary Operator, The Checked and unchecked Operators, The Is Operator , The as Operator , The Sizeof Operator , The Type of Operator , Nullable Types and Operators , The Null Coalescing Operator , Operator Precedence
- Type Safety, Type Conversions, Boxing and Unboxing , Comparing Objects For Equality , Operator Overloading , User Defined Casts.

Object oriented aspects of C#

- Classes, Objects, Inheritance, Polymorphism, Interfaces,
- Operator Overloading, Delegates, Events, Errors and Exceptions

UNIT-D **12 Hours**

I/O and Object serialization

- I/O: System. I/O, Streams, TextWriter, TextReader

Writing windows forms applications and deploying windows forms applications

- Writing Windows Forms Applications: Understanding Windows Forms, Window Form Controls,Menus, MDI Forms
- Using Inheritance In Windows Forms, Using Common Dialog Controls,
- Deploying Windows Forms Applications
- Introduction To Deployment, ClickOnce Deployment,Creating An Installation Package For Project

Reference Books

1. Nagel Christian, Evgen Bill and GiynnJay, *Professional C# 2005*, Wrox Publications, 2006
2. Dietel & Dietel , *C# How to Program*, New Delhi: Pearson Education, 2007.
3. Sharp John & Jagger John,*Visual C#.Net*, New Delhi: PHI, New Delhi, 2005.
4. Francisco, *Visual Studio .Net*, Microsoft Publication, 2012.
5. Jones, Bradley L, *Teach Yourself C# in 21 Days*. Sams publishing, 2001
6. Balagurusamy, E., *Programming in C#*, New Delhi:Tata McGraw-Hill (UNIT I, II),2004.

Course Title: Information Systems
Course Code: CSA211
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective:To provide knowledge about the concepts and usage of different types of information systems at various managerial levels in the organizations.

UNIT-A **15 Hours**

Introduction

- Fundamental Aspects of Information, Capturing of Information, Converting Information to Computer – Readable Form, Source of Information, On–Line Information Access and Capture
- Basic Systems Concepts, Elements (Components) of System, Characteristics of System, Types of Systems, System Approach.
- Information Systems: Definition &Characteristics, Types of Information, Role Of Information in Decision - Making, Levels of Management
- Introduction to Different Kinds Of Information Systems: ESS, EIS, DSS, MIS,KWS, TPS, OAS And EDP.

UNIT-B **12 Hours**

Information Systems

- Categories of Information Systems, Development Life Cycle of Information System
- Technologies For Information System: Latest Trends In Hardware and Software

An overview of Management Information System

- Definition &Characteristics, Components of MIS, Frame Work for Understanding MIS: Robert Anthony's Hierarchy Of Management Activity
- Structured Vs Unstructured Decisions, Formal Vs. Informal Systems, Pitfalls In MIS Development

UNIT-C **8 Hours**

Simon's Model of Decision

- Making. DSS: Concept, Characteristics And Components, Gorry &Scott Morton Grid, Introduction to GDSS

Developing Information Systems

- Analysis & Design of Information Systems: Implementation & Evaluation.

UNIT-D **10 Hours**

Various types of information systems

- Transaction Processing Systems, Office AutomationSystems, MIS and Decision Support System.

Functional MIS

- A Study of Marketing, Personnel, Financial and Production MIS

Case studies of the Information System

- Accounting Information Systems, Inventory Control Systems &Marketing Systems.

Reference Books

1. Laudon K.C.,*Management Information Systems*, New Delhi:Pearson 11th Ed.
2. Murdick, Robert G., & Ross, Joel E., & Claggett, James R, *Information Systems for Modern Management*, PHI ,Third Edition.
3. Kanter, J, *Management Information Systems*, PHI, 3rd Ed
4. Goyal, D.P, *Management Information Systems*, Macmillan, 3rd Ed.
5. Oz, Effy, *Management Information Systems*, Thomson Press Indian Edition

Course Title: Computer Networks-II
Course Code: CSA212
Course Duration: 25-30 Hours

L	T	P	Credits	Marks
2	0	0	2	50

Course Objective: Fundamental principles as well as the critical role of performance in driving protocol and network design; it explores in detail all the critical technical areas in data communications, and protocol design.

UNIT-A **7 Hours**

Transport Layer

- Transport Service
- Transport Protocol (TCP, UDP, ATM, AAL Layer Protocol)

8 Hours

UNIT-B

Application Layer

- Network Security
- DNS, Email
- World Wide Web
- Multimedia

6 Hours

UNIT-C

Application layer:

- Security
- SNMP
- RMON

9 Hours

UNIT-D

Network Security

- Malicious Software (Virus, Life Cycle Of Virus, Trojan Horses, Worms, Zombie, Logic Bomb),
- Basic Encryption Techniques (Public Key And Secret Key Encryption),
- Firewalls (Application And Packet Filtering),
- Virtual Private Network, IP SEC (Architecture And Modes Of Operation)
- Digital Signature Standard.

Reference Books

1. Tanenbaum. Andrew S. , *Computer Networks*, 4th Edition, New Delhi: PHI, 2013.
2. Forouzan B. A., *Data Communications and Networking*, Fourth Edition, New Delhi: Tata McGraw Hill, 2003.
3. Stalling W, *Data & Computer Communications*, New Delhi: PHI, Ninth Edition 2010.

Course Title: Software Engineering
Course Code: CSA213
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: The course should provide an introduction to the fundamentals principles of software engineering. The present course should seek to equip the student with a repertoire of principles, tools and techniques and make him/her appreciate that software engineering is, after all, an exercise in making compromises.

UNIT-A **8 Hours**

Software Engineering Principles:

- How is Software Engineering an Engineering Discipline
- Information System Characteristics, Software Development Process Models,
- Life Cycle Concepts, Software Phases and Deliverables, Software Development Strategies

UNIT-B **8 Hours**

Technical Development:

- Structured Systems Analysis and Design Requirements
- Collection And Specification, Data Flow and Logical Data Modeling, Cost Benefit Analysis,
- Feasibility Study, Architectural And Detailed Design, Process, Data, Network, Control
- User Interface Designs, Physical Data Design, Dynamic Modeling for Real-Time Systems

UNIT-C **14 Hours**

Software Project Management:

- Principles Of Software Project ManagementOrganizational and Team Structure
- Project Planning, Project Initiation and Project Termination; Technical
- Quality And Management Plans, Project Controls, Cost Estimation Methods-Function Points and COCOMO, Tools
- Software Quality Management: Quality Control, Quality Assurance, Quality Standards
- Software Metrics, Verification And Validation, Testing, Quality Plans, Tools Configuration Management.

UNIT-D **15 Hours**

Software Development Method & CASE:

- Formal, Semi-Formal and Informal Methods; Data Function, and Event-Based Modeling, Some of The Popular Methodologies Such as Yourdon's SAD, SSADM Etc.
- CASE Tools, CASE Standards
- Implementation: In 3GL Environment, In 4GL Environment, In Client-Server Environments, Coding Styles.
- Documentation, Software Maintenance

Reference Books

1. Pressman R. S., *Software Engineering: A practitioner's Approach*, New York: McGraw Hill, Seventh Edition 2010.
2. Jalote Pankaj, *An Integrated Approach to Software Engineering*, New Delhi:Pearson 2010.
3. Sommerville I., *Software Engineering*, Addison –Pearson, Eighth Edition 2009.

Course Title: Workshop on 2D animation with Flash
Course Code: CSA214

L	T	P	Credits	Marks
0	0	4	2	50

Course Objective: These courses will Digital portfolios and Flash- Based Games and Sites making use of the Tools and Action Script in Flash.

UNIT-A

- Animation Basics
- Timeline, Frames and Key Frame

UNIT-B

- Creating a basic text animation
- Creating and Manipulating Animations
-
- Creating a Frame and Frame Animations

UNIT-C

- Creating Action Scrpit Movies.
- Movie Content Action Scrpit.

UNIT—D

- Embedding Video and Sound.

Reference Books

1. Watkins Adam, *Maya A Professional Guide* , Dreamtech,first edition – 2003.
2. Lott Joey and Reinhardt Robert., *Flash 8 Action Script Bible*. Delhi: Wiley India (P) Ltd.2006.
3. Meade Tom and Anima Shinsaka, *The Complete Reference Maya 6* , New Delhi: Tata MC.Graw – Hill Publishing Company Limited edition 2004.
4. Hardt Robert Rein and Dowd Snow , *Macromedia Flash 8 Bible*. Delhi: Wiley India Pvt Ltd.2006

Course Title: Workshop on Photoshop
Course Code: CSA215

L	T	P	Credits	Marks
0	0	4	2	50

Course Objective: This course will able to understand the fundamentals of Photoshop and can able to retouch and repair, work with multiple layers, Slice and Clone, Design basic web templates and create animations

UNIT—A

- Photoshop History and Introduction
- The File Menu, The Tools, Drawing Lines and Shapes

UNIT—B

- Inserting Picture and Shapes, Filling Colors
- Text Effects
- Working with Layers
- Filters

UNIT—C

- Creating design patterns, Photoshop presentations static and dynamic
- Web and web Gallery using internet explorer in Photoshop
- Congestion Control Algorithms, IP Protocol

UNIT—D

- Creating animations using image ready, creating animations and presentations

Reference Books

1. Brie Gyncild, *Adobe Photoshop CS6 in Classroom* , Delhi: Wiley Publications.
2. *Adobe Photoshop classroom in a Book*, Delhi: Adobe Press,2012.

Course Title: Programming in C# Laboratory
Course Code: CSA216

L	T	P	Credits	Marks
0	0	4	2	50

- Implementation of OOPs Concepts
- Namespaces
- Array and Strings
- Structures and Enumerations
- Delegates and Events
- Exception Handling

Course Title: Internet Applications
Course Code: CSA301
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective:

- Describe The Evolution of The Internet
- Understand The Protocols and Standards Used Throughout The Internet
- Discuss a Variety of Internet and WWW Applications and Related Technologies
- Evaluate The Opportunities and Threats Created By Interconnecting Computers Via The Internet

UNIT—A **13 Hours**

Evolution Of The Internet

- Growth of The World Wide Web.
- Client-Server Model.
- Architecture of The Intranet/ Internet /Extranet.
- Access Methods: Dialup, Isdn, Adsl/2+, Cable, Lan, Wifi, Mobile Satellite.
- Proxy Servers.
- Application Areas: E-Commerce, Education,
- Entertainment such as Games and Gambling.
- Portals, Discussion Forums, Weblogs, Podcasting,Rss / Atom, Wiki, Voip, Video on Demand.
- Search Engines, Webbots, Integrity of Information, Databases Online.

UNIT—B **11 Hours**

Application Layer

- URL
- TCP/IP Fixed and Dynamic IP Addressing.
- Role of DNS.
- Email: Email Clients, Server and Gateways; SMTP,POP3, IMAP & Webmail.
- File Transfer – FTP.
- Remote Login – Telnet.
- WWW – HTTP and HTTPS.
- Role of W3C.
- Accessibility. , Mobile Computing, Wireless, 3G, GPS.

UNIT—C **13Hours**

Static and dynamic HTML.

- Fluency in At Least one of The Following Client-Side Scripting Languages: Javascript or VBscript.
- DOM Model, Style Sheets, CSS and XSL.
- Development Tools: Page And Site Authoring, Delivery And Maintenance Tools.
- Multimedia Content: Text, Graphics, Sound, Animation and Video - Performance and Quality Issues; Streaming.
- Hosting Choices and Issues. Usability Issues.

8 Hours

UNIT—D

Security Policies/Privacy

- Identification/Authentication/Access Control.
- Hardware and Software, Risk Assessment, Vulnerabilities.
- Threats and Attack Methods auch as Viruses, Spam, Root Kits, "Phishing", Firewalls – Spyware Plug-Ins.
- Performance: Speed, Reliability, Downtime, Bandwidth.

Reference Books

1. Bates, C., *Web Programming: Building Internet Applications*, John Wiley and Sons (3rd Ed), 2006.
2. Hofstetter, F.T., *Internet Literacy*, New York:McGraw Hill , 2005.

Course Title: Core JAVA
Course Code: CSA302
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: To provide the advanced Knowledge about OOPS

UNIT—A

An overview of Java **15 Hours**

- Object Oriented Programming, Two Paradigms
- Abstraction, The, OOP Principles, Java Class Libraries
- Date Types, Variables And Arrays:-Integers, Floating-Point Types, Characters, Boolean, Iterates, Variable, Data Types And Casting
- Automatic Type Promotion in Expressions Arrays.
- Operators: Arithmetic Operators, Bit Wise Operators, Relational Operators
- Boolean Logical Assignment Operators, The? Operator, Operator Precedence ControlStatements
- Java's Selection Statements, Iteration Statements, Jump Statements
- Introduction to Classes: Class Fundamentals, Declaring Object Reference Variable

UNIT—B **10 Hours**

Introducing Methods

- Constructors, The Key Word, Garbage Collection, The Finalize () Method
- Methods And Classes :-Overloading Methods, Using Objects As Parameters,Recursion

Inheritance:

- Inheritance Basics, Using Super, Method Overriding, Dynamic MethodDispatch
- Using Abstract Classes, Using Final With Inheritance, Package and Interfaces
- Package Asses Protection, Importing Packages

UNIT—C **10 Hours**

Exception Handling:

- Exception Handling Fundamentals., Exception Types
- Uncaught Exceptions Using Try and Catch, Multiple Catch Clauses, Nested Try Statements Throw
- Finally Java Built in Exception Creating Your own Exception Sub Classes, Using Exceptions

Multithreaded Programming:

- The Java Thread Model, The Main Thread, Creating Thread, Creating Multiple Thread, Using Is Alive () and Join ()

UNIT—D **10 Hours**

String Handling:

- The String Constructor, String Length, Special String Operator Character

- Extraction, String Comparison, Searching String, Modifying String, Data Conversion

The Applet Class:

- Its Architecture Displays Methods. The HTML APPLET.
- Passing Parameters to Applet. The Get Documentation Base () and Get Code Base () Methods
- Applet Context And Show Document ()

Reference Books

1. Eckel Bruce ,*Thinking in Java*, Pearson Education, Fourth Edition, 2006.
2. Schildt Herbert, *The Complete Reference Java 2*, New Delhi: TMH, 2005.
3. Balagurusami E, *Programming In Java*, New Delhi: Tata McGraw Hill Fourth Edition.
4. Bayross Ivan, *Advance Java*, New Delhi:BPB Publications.
5. *Mastering Java*, New Delhi:BPB Publications, Second Edition.

Course Title: Operating Systems
Course Code: CSA303
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective: To understand the overall working of the operating system and its main components. To gain knowledge of functions of operating systems such as process management, memory management, disk management, etc.

UNIT—A **9 Hours**

Introduction To Operating System

- Operating System Structure
- Operating System as Resource Manager
- Process Concept

UNIT—B **14 Hours**

Process Management

- CPU Scheduling
- Process Synchronization
- Deadlocks

UNIT—C **12 Hours**

Memory management

- Logical v/s Physical address space, Swapping.
- Contiguous memory management
- Paging and Segmentation

Virtual Memory

- Demand Paging
- Page Replacement Algorithms
- Thrashing

UNIT—D **12 Hours**

Secondary Storage Structures

- Disk Structures
- Disk Scheduling

Multiprocessor and distributed operating system

- Introduction to multiprocessor and distributed operating systems

Reference Books

1. Galvin and Silberschatz A., *Operating System Concepts*, Eigth Addition, New York: J. Wiley & Sons, 2009.
2. Crowley, *Operating Systems: A Design Oriented Approach*, New Delhi: Tata McGraw Hill, 2008.
3. Donovan J.J, *Systems Programming*, New York: McGraw Hill, 1972.
4. Dhamdhere. D.M, *System Programming and Operating Systems*, New Delhi: Tata McGraw Hill, 1999.
5. Madnick and Donovan, *Operating System*, New York: McGraw Hill, 1978.
6. Beck Leland L., *System Software*, Delhi: Pearson Education, 2000.
7. Henson P.B., *Operating System Principles*, Delhi: Prentice Hall
8. Tenenbaum A.S., *Operating System: Design and Implementation*, New Delhi: PHI, 2013.

Course Title: e-Commerce
Course Code: CSA304
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
2	0	0	2	50

Course Objective: The course provides the knowledge about Business transactions using new technologies.

UNIT—A **10 Hours**

- Introduction to Electronics Commerce.
- Defining Electronics Commerce, Forces Fueling Electronics Commerce.
- Electronics Commerce Industry Frame Work, Types of Electronics Commerce.
- World Wide Web and Its Applications:-Brief History and Introduction of WWW, The Web and The Electronicscommerce.
- Key Concepts Behindweb, Web and Database Integration, Websoftware Development Tools (HTML, XML, UML, Java Script, VB Script, ASP, JSP).
- Multimedia Web Extensions (VRML, Real Audio, Internet and Web Based Tech3. Firewalls and Transaction Security.

UNIT—B **15 Hours**

- Introduction to Firewalls and Network Security (Types, Policies and Management).
- Transaction Security, Encryption and Transaction Security, The Comparison of Encryption Methods.
- Security in WWW (Netscape's Secure Socket Layer, Security and Online Web Based Banking).
- Electronic Payment Systems :-Overview of the Electronics payment technology.
- Electronics cash, Electronics checks, online credit cards based system
- Other emerging financial instruments.

UNIT—C **13 Hours**

- Electronics Commerce and banking ,Home Banking
- Banking via the PC using Internet/Intranet, Banking via online services, Banking via Web.
- Electronics Commerce and Retailing, Changing Retail industry dynamics and technology improvements in Electronics retailing, Mercantile models from consumers perspective , Directories and search engines.
- Supply Chain Management Fundamentals and Management of Supply Chains, Supply Chain Application Software Ad Its Future.

UNIT—D **7 Hours**

- Roadmaps to E-Business
- Challenges and strategy creation, Roadmaps to E-Business
- Translating E-Business strategy into action
- Beginning of a virtual factor
- E-business blueprint creation, E-Business project planning checklist, an execution blueprint.

- Failures of E-Business Initiatives.

Reference Books

1. Kalkota Ravi, *E-Business - Roadmap for success*, Mexico City:Addison Wesley (Pearson Education Asia),2000.
2. Kosiur David, *Electronic Commerce*, Microsoft Press,2007.
3. Kalakota Ravi and Andrew B. Whinston, *Electronic Commerce*, Mexico City:Addison Wesley,2007.

Course Title: Information Security
Course Code: CSA375
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

UNIT - A **15 Hours**

Introduction

- Security, Attacks, Computer Criminals
- Security Services, Security Mechanisms.

Program Security

- Secure programs, Non malicious Program errors, Malicious codes virus
- Trap doors, Salami attacks, Covert channels, Control against program

UNIT – B **12 Hours**

Cryptography

- Substitution ciphers, Transpositions Cipher,
- Confusion, diffusion, Symmetric, Asymmetric Encryption.
- DES Modes of DES, Uses of Encryption, Hash function, key exchange
- Digital Signatures, Digital Certificates.

UNIT – C **08 Hours**

Threats

- Protection in OS: Memory and Address Protection, Access control
- File Protection, User Authentication.

Database Security

- Requirements, Reliability, Integrity
- Sensitive data, Inference, Multilevel Security.

UNIT – D **10 Hours**

Security in Networks

- Threats in Networks, Security Controls
- Firewalls, Intrusion detection systems, Secure e-mails.

Administrating Security

- Security Planning, Risk Analysis, Organisational Security Policy
- Physical Security.
- Ethical issues in Security: Protecting Programs and data. Information and law.

Reference Books

1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006

2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

Course Title: Workshop on 3D Modelling
Course Code: CSA306

L	T	P	Credits	Marks
0	0	4	2	50

Course Objective:

UNIT—A

- Basic concepts of 3d studio max: Introduction to space, concepts of time, rendering options. THE MAX INTERFACE, Accessing commands in the menu bar, Accessing features in the shelf area, The command panel, Navigating in view ports,· using specialized user interface tools

UNIT—B

- **ANIMATION KEYS:** Concepts Of Time In Animation, Working With The Max Animation Tool, Getting Started The Animation In Max, Using Controllers To Animate, Using The Track View To Animate, Using Dummy Objects, Animating Hierarchies, Working In Character Studio

UNIT—C

- Basic Materials, Understanding Cg Shading, Multi-Media Technology & D.T.P, Mastering The Material Editor, Understanding Common Material Types, Map Types· Raytrace Materials, Creating Mat/Shadow Materials, Building Compound Materials, New Materials Features In R3 Camera Mapping 23

UNIT—D

- ADDING COLOR AND LIGHT: Understanding Color Model, Exploring The Color And Light Tools In Max, Setting Your Light Parameters, Simulating Light And Color In 2d, Designing Your Lighting

Reference Books

1. Murdock Kelly L., *3ds maxTM 4 Bible*, New York: John Wiley & Sons
2. Steed Paul, *Modeling a Character in 3DS Max*, Wordware Publishing;
3. Dubeda Lukas, *3ds Max 2010 Architectural Visualization - Advanced to Expert*, 3DATS, 2009
4. Kelly L. Murdock, *3ds Max 2010 Bible* , New York: Wiley,2009

Course Title: Internet Applications Laboratory
Course Code: CSA307

L	T	P	Credits	Marks
0	0	4	2	50

- HTML tags
- DHTML: CSS Style Sheets
- JavaScript basics, constructs and functions
- VBScripting basics, constructs and functions

Course Title: Core JAVA Laboratory
Course Code: CSA308

L	T	P	Credits	Marks
0	0	4	2	50

- Implementation of OOP concepts using JAVA
- Packages and Interfaces
- Exception Handling
- Applets
- AWT classes

Course Title: Computer Graphics and Multimedia
Course Code: CSA309
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Objectives: The objective of the study is to let students understand basics of computer graphics,
Input/output primitive and basic transformations, which can be applied on objects of graphics.

UNIT – A **10 Hours**

Overview of Graphics Systems

- Video Display Devices
- Raster Scan Systems, Random Scan Systems.
- Graphics Monitors and Workstations,
- CRT Monitors (Random – Scan and Raster Scan, DVST, Plasma – PanelDisplay
- LED and LCD Monitors.

UNIT-B **10 Hours**

Scan Conversion

- Scan Conversion Algorithms For Line, Circle and Ellipse
- Effect of Scan Conversion
- Bresenham's Algorithms for Line and Circle Along with Their Derivations
- Midpoint Circle Algorithm, Area Filling Techniques, Flood Fill Techniques Character Generation

UNIT – C **15Hours**

Two Dimensional Transformations

- Basic Transformations,Ceiling, Translation, Rotation, Deflection,
- Skew Matrix representation of Basic transformations
- Homogenous Coordinates

Composite Transformations.

- Windowing and Clipping, Windowing Concedes, Clipping and its Algorithms.
- Window–to–View Port Transformations
- Three Dimensional Concepts
- 3 D Coordinate Systems
- 3 D transformations:Translation, Scaling, Rotation
- Projections: Parallel Projections, Perspective Projection

UNIT – D **10 Hours**

Technology System Components

- Multimedia Platforms
- Development Tools, Image, Audio
- Video, Storage for Multimedia, Communications

Applications

- Multimedia in the Real World, Training and Education, Image Processing

Reference Books:

1. D. Hearn and M.P. Baker, *Computer Graphics*(2nd ed.), New Delhi: Prentice–Hall of India, 2004.
2. Foley. J.D., Dam A van, FeinerS.K. andHughes J.F., *Computer Graphics: Principals and Practices*(2nd ed.), Addison-Wesley, MA, 1990.
3. Rogers D.F., *Procedural Elements in Computer Graphics (2nd ed.),* New Delhi: McGraw Hill Book Company, 2001.
4. Plastock Roy A., Kalley Gordon,*Computer Graphics*, New Delhi: McGraw Hill Book Company, 1996,

Course Title: Internet Programming with ASP.NET
Course Code: CSA310
Course Duration: 45-60 Hours

L	T	P	Credits	Marks
4	0	0	4	100

Course Objective:

- To build web applications using ASP and client side script technologies use with Microsoft's IIS.
- To build XML applications with DTD and style sheets that span multiple domains ranging from finance to vector graphics to genealogy for use with legacy browsers.

UNIT—A **12 Hours**

Introduction to Three-Tier Architecture

- Overview of .NET Framework , Common Language Runtime (CLR)
- The .NET Framework Class Library, familiarization with visual studio .NET IDE, Design Window, Code Window, Server.
- Explorer, Toolbox, Docking Windows, Properties Explorer, Solution Explorer, Object Browser, Dynamic Help, Task List Explorer.
- Features of VS.NET, XML Editor, Creating a Project, Add Reference, Build the Project, Debugging a Project.

UNIT-B **12 Hours**

Introduction to Standard Controls

- Display information, Accepting user input, Submitting form data,
- Displaying images,
- Using the panel control, using the hyperlink control.

Introduction to Validation Controls

- Using the required field validator control, using the range validator control using the compare validator control, using the regular expression validator control, using the custom validator control, using the validation summary controls.

Introduction to Rich Controls

- Accepting file uploads ,Displaying a calendar
- Displaying advertisement, Displaying different page views, Displaying a wizard

UNIT-C **13 Hours**

Designing Website with Master Pages

- Creating master pages, Modifying master page content, and Loading master page dynamically.

SQL Data Source Control

- Creating database connections, Executing database commands,
- Using ASP.NET parameters with the SQL data source controls, programmatically executing SQL data source commands, Cashing database data with the SQL data Source controls.

List Controls

- Dropdown list control, Radio button list controls, list box controls, bulleted list controls, custom list controls.

UNIT-D **10 Hours**

Grid View Controls

- Grid view control fundamentals,
- Using field with the grid view control, working with grid view control events extending the grid view control.

Building Data Access Components with ADO.NET

- Connected the data access
- Disconnected data access
- Executing a synchronous database commands, Building database objects with the .NET framework.

Reference Books

1. Imar Spaanjaars, *Beginning ASP.NET 4: in C# and VB (Wrox)*, Paperback Edition, 2010.
2. George Shepherd, *Microsoft ASP.NET 4 Step by Step (Microsoft)*, Paperback Edition, 2010.
3. Scott Mitchell, *Teach Yourself ASP.NET 4 in 24 Hours*, Complete Starter Kit.

Course Title: Computer Graphics Laboratory
Course Code: CSA311

L	T	P	Credits	Marks
0	0	4	2	50

Implementation of Graphics Functions

- Algorithms Implementation (line, circle, ellipse)
- 2D transformation Implementation

Course Title: Web Engineering using ASP.NET Laboratory
Course Code: CSA312

L	T	P	Credits	Marks
0	0	4	2	50

- Implementation of ASP.NET concepts
- Using different web controls
- Using validation controls
- Designing Web forms, adding components
- Database Connectivity using ADO.NET