Program Code:Dip002

SCHEME & SYLLABUS

DCA (Diploma in Computer Applications)

(Choice Based Credit System)

Department of Computer Science and Applications
UICA&IS
Sant Baba Bhag Singh University
2021-2022

ABOUT THE DEPARTMENT

The Department of Computer Science and Applications strives for excellence in creating, applying and imparting knowledge in computer science through comprehensive educational programs, research & dissemination through scholarly publications and service to professional societies, the community, the state and the nation. The department imparts quality education ranging from the expertise in traditional software development to the modern computing technologies.

SALIENT FEATURES OF THE DEPARTMENT

- Research oriented curriculum designed to enable students to acquire all the skills needed to collect and analyze the data.
- The Institute drawing upon its strength of highly qualified well trained faculty, state of art infrastructure and innovative teaching methodology.
- Elective courses that brides the gap between industry requirements and academia.
- Hands on experience in most of the courses of computer applications so as to impart practical knowledge in the relevant field.
- To keep the students at par with the emerging technologies prevailing in the market, the institute is furnished with various specialized research labs and software labs.

DCA (DIPLOMA IN COMPUTER APPLICATION)

DCA is a route for the Arts and Commerce students of 10+2 to join the band of computer professionals. The program is designed to build programming skills for developing efficient and resource optimized software/website/cloud/mobile applications. They can also pursue BCA program in computer applications (BCA) after diploma.

VISION

To prepare technically proficient and skillful computer professionals thereby contributing towards building a strong and developed nation

MISSION

To provides innovative and quality knowledge to students for global competence and excellence. Also, to prepare high quality Professionals for catering the needs of industry

ELIGIBILITY CRITERIA

10+2 or its equivalent examination in any stream conducted by a recognized Board/ University/Council.

DURATION

1 Year

CAREER PATHWAYS

The program is designed to meet the growing requirement of qualified professionals in field of IT industry and education. BCA graduates are hired both by Government and private organizations. They can also take up their career as software developer. They may join Post Graduation Courses further.

- **Government Jobs**
  Prepare students for various government jobs such as banking sector, civil services etc. Many government information technology companies and government like BHEL, NSDL, MTNL and BSNL are hiring BCA graduates.
- **Corporate Jobs**
  Multiple pathways designed according to the level of the students to prepare them for different job profiles as per needs of industrial sector.
- **Higher Studies**
  This pathway prepares students for Higher Studies and helps in their research also.
- **Entrepreneurship**

  To set up new ventures

PROGRAMME EDUCATIONAL OBJECTIVE (PEO)

PEO1: Implement computing solutions for real world problems and carry out basic and applied research leading to new innovations in Information Technology (IT) and related interdisciplinary areas.

PEO2: Apply knowledge of societal impacts of information technologies in the course of their career related activities ethically and appropriately.

PEO3: Have strong communication and interpersonal skills, broad knowledge, and an understanding of multicultural and global perspectives to work effectively and ethically in multidisciplinary teams, both as team members and leaders.

PEO4: Engage in life-long learning, to remain current in their profession and obtain additional qualifications to enhance their career positions in IT industries.

PROGRAMME OUTCOMES (PO)

PO1: Apply the knowledge of mathematics, science and computing in the core information technologies.

PO2: Design, implement and evaluate a computer-based system, or process component, to meet the desired needs within the realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

PO3: Analyze the local and global impact of computing on individuals, organizations, and society.

PO4: Communicate effectively with a range of audiences using a range of modalities including written, oral and graphical.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: Analyze and recommend the appropriate IT infrastructure required for the implementation of a project

PSO2: Students will able to choose the data model with appropriate architecture and implement a system with high efficiency

PSO3: Design, develop and test software systems for world-wide network of computers to provide solutions to real world problems.

PSO4: Make it possible to find the solutions for complicating hardware and software problems.

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S.No	Subject Type	Subject Code	Subject	Semester	Page No
Scheme					
1	AECC	ENG121*	Communication Skills I	1	1
2	CC	DCA101	Fundamentals of Computer	1	2,3
3	CC	DCA103	Graphic Tools	1	4,5
4	CC	DCA105	Computer Programming	1	6,7
5	CC	DCA107	Office Automation	1	8
6	CC	CSA111	Digital Electronics	1	9,10
7	CC	DCA111	Fundamentals of Computer (Lab)	1	11
8	CC	DCA113	Computer Programming (Lab)	1	12
9	AECC	ENG 123*	Communication Skills-1 (Practical)	1	13
10	CC	DCA102	Programming in C++	2	14,15
11	CC	DCA104	Computer Networks	2	16,17
12	AECC	ENG114*	Communication Skills II	2	18
13	AECC	MAT108*	Statistical Techniques in Computer Science	2	19
14	CC	DCA106	Introduction to web development	2	20,21
15	CC	DCA112	Office Automation	2	22
16	CC	DCA108	Programming in C++ (Lab)	2	23
17	CC	DCA110	Introduction to Web development (Lab)	2	24
18	AECC	ENG116*	Communication Skills II(Practical)	2	25

COURSE CLASSIFICATION					
1. **Ability Enhancement Compulsory Course**		**L**	**T**	**P**	**Credits**
1.	Communication Skills I	2	0	0	2
3.	Communication Skills II	2	0	0	2
4.	Statistical Techniques in Computer Science	5	0	0	5
Total Credits					**9**
2. Professional Core Courses (Theory)		**L**	**T**	**P**	**Credits**
1.	Fundamentals of Computer	3	1	0	4
2.	Graphic Tools	3	1	0	4
3	Digital Electronics & Microprocessor	3	1	0	4
4	Computer Programming	3	1	0	4
5	Programming in C++	3	1	0	4
6	Computer Networks	3	1	0	4
7	Introduction to web development	3	1	0	4
8	Office Automation	4	0	0	4
Total Credits					**32**
3. Professional Core Courses (Practical)		**L**	**T**	**P**	**Credits**
1.	Communication Skills-1 (Practical)	0	0	2	1
2.	Fundamentals of Computer Lab	0	0	2	1
3.	Computer Programming Lab	0	0	4	2
4.	Programming in C++ Lab	0	0	4	2
5.	Introduction to Web development Lab	0	0	4	2
Total Credits					**8**

Total Credit-49

As per the Govt Norms: - No Guidelines given

Course Scheme (DCA)
Semester 1

I. Theory Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	AECC	ENG121*	Communication Skills I	2:0:0	2:0:0	2	2
2	CC	DCA101	Fundamentals of Computer	3:1:0	3:1:0	4	4
3	CC	DCA103	Graphic Tools	3:0:0	3:0:0	3	3
4	CC	DCA105	Computer Programming	3:1:0	3:1:0	4	4
5	CC	CSA111	Digital Electronics	3:1:0	3:1:0	4	4
6	PT	**PT101/ PT103/ PT105**	Physical Training (NSO/NCC/NSS)	0:0:2	NC	2	NC

II. Practical Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CC	DCA107	Fundamentals of Computer (Lab)	0:0:4	0:0:2	4	2
2	CC	DCA109	Computer Programming (Lab)	0:0:4	0:0:2	4	2
3	AECC	ENG123*	Communication Skills-1 (Practical)	0:0:2	0:0:1	2	1

Total Credits: 22
Total Contact Hours: 29

Semester 2

I. Theory Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CC	DCA102	Programming in C++	3:0:0	3:0:0	3	3
2	CC	DCA104	Computer Networks	3:1:0	3:1:0	4	4
3	AECC	ENG114*	Communication Skills II	2:0:0	2:0:0	2	2
4	AECC	MAT108*	Statistical Techniques in Computer Science	5:0:0	5:0:0	5	5
5	CC	DCA106	Introduction to web development	3:1:0	3:1:0	4	4
6	CC	DCA112	Office Automation	4:0:0	4:0:0	4	4
7	PT	**PT102/ PT104/ PT106**	Physical Training (NSO/NCC/NSS)	0:0:2	NC	2	NC

II. Practical Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CC	DCA108	Programming in C++ (Lab)	0:0:4	0:0:2	4	2
2	CC	DCA110	Introduction to Web development (Lab)	0:0:4	0:0:2	4	2
3	AECC	ENG116*	Communication Skills - II (Practical)	0:0:2	0:0:1	2	1

Total Credits: 27
Total Contact Hours: 34

Course Code	**ENG121***
Course Title	**Communication Skills-I**
Type of Course	AECC
L T P	2:0:0
Credits	2
Course pre-requisite	NA
Course Objectives	The main objective of this course is to enhance the communication skills of the students.
Course Outcomes	The students will able to : 1.Assist the students to acquire proficiency, both in spoken and written language 2. Develop the comprehension, improve writing skills, and enhance skills in spoken English. 3. Analyze a variety of communication acts.

SYLLABUS

UNIT-I:

Basics of Communication Skills: Communication, Process of Communication, Types of Communication-Verbal and Non verbal communication, Channels of Communication- Upward, Downward, Horizontal, Barriers to Communication, Role of Communication in society.

UNIT-II:

Listening Skills: Listening Process, Hearing and Listening, Types of Listening, Effective Listening, Barriers of Effective Listening, Note Taking

Reading Skills: Purpose of reading, Process of reading, reading skills Models and strategies, scanning, skimming, SQ3R, Approaches of Reading, Comprehension passages for practice.

UNIT III:

Writing Skills: Purpose of writing, Effective writing, Types of writing, Business Correspondence, Precise writing, Memo writing, minutes of meeting.

UNIT-IV:

Speaking Skills: Speech process, Skills of effective speaking, Role of audience, Feedback Skill, Oral Presentation.

RECOMMENDED BOOKS

Sr No	Author(s)	Title	Publisher
1.	BhupenderKour	Effectual Communication Skills	S.K. Kataria and Sons
2.	R. Datta Roy and K.K. Dheer	Communications Skills	Vishal Publishing Company
3.	The Essence of Effective Communication	Ludlow and Panthon	Prentice Hall of India

Course Code	**DCA101**
Course Title	**Fundamentals of Computer**
Type of Course	Core
L T P	3 1 0
Credits	4
Course Prerequisites	Basic knowledge of computers
Course Objective	The objective of the study is to provide insight knowledge of computer organization and techniques
Course Outcome (CO)	The students will be able to: 1. Bridge the fundamental concept of computers. 2. Familiarize with peripheral devices. 3. Understand and implement MS-Office concepts. 4. Learn basics of operating system.

SYLLABUS

UNIT I:

Introduction To Computer System: Introduction, Characteristics of Computers, Evolution of Computers, The computer Generation, Basic Computer Organization, Classification Of Computers: Notebook Computers , Personal Computers, Workstation, Mainframe Systems, Supercomputer, Minicomputer, Microcomputer, Clients and servers.

Processor and Memory: The Central Processing Unit, The Main Memory, Memory Buses, I/O Buses. Secondary Storage Devices, Cache Memory, Virtual Memory

UNIT II:

Input Output Devices: Input Devices: Keyboard , Point and Draw Devices, Data Scanning Devices, Digitizer, Electronic Card Reader, Voice Recognition Devices, Vision Input Device.

Output Devices : Monitors , Printer , Plotter, Screen Image Projector, Voice Response System

UNIT III:

Disk Operating System: Introduction of DOS, History, Files and Directory, Types of files, Configuration of DOS (config.sys), Booting Procedure of DOS

Study of Commands: Internal commands:- Append, cls, ver, vol, date, time, type, md, cd, comp, rd, edit, rename, dir, copy, copy con, pipe.

External commands:–attrib, diskcopy, scandisk, format, deltree, xcopy, disccomp, edit, erase, help, backup, chkdsk, deltree.

Batch file concept & study of Autoexec.bat file

UNIT IV:

Introduction to Word processor: Uses of Ms- Word, Introduction to Ms-Word Windows: Title bar, Menu bar, Toolbar, Standard Toolbar, Formatting toolbar, The Ruler bar, Insertion point, Scroll Bars.

Introduction to Spreadsheet

Spreadsheet overview, starting excel, creating spreadsheet, excel menu. Working with Formulas and Functions: Introduction using basic formulae, advance formulae, designing formulae.

Formatting: Types of formatting: Using borders, color and patterns, Conditional formatting

Creating and Formatting Charts: Introduction to charts, Creating charts, formatting charts, exploring charts.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Fundamentals Of Computers	V. Rajaraman.	Prentice Hall India Pvt., Limited.

2.	Microsoft Office 2000	COMPLETE	BPB
3.	MS-Dos 6.22	Russell A Stultz	BPB Publication

Course Code	**DCA103**
Course Title	**Graphic Tools**
Type of Course	Core
L T P	3 0 0
Credits	3
Course Prerequisites	Basic knowledge of computers
Course Objective	The objective of study is to make students efficient in the working of MS-Word, MS-Excel, Power Point & MS Access
Course Outcome (CO)	The students will be able to: 1. Use knowledge of HTML and CSS code and an HTML editor

	to create personal and/or business websites following professional and industry standards. 2. Implement HTML coding and its tags. 3. Use critical thinking skills to design and create websites. 4. Understand cascading style sheets and javascript with HTML

SYLLABUS

UNIT I:

Introduction to HTML: Overview of HTML. Rules of HTML documents. Structure of HTML documents, Tags-Definition, Classification of Tags.Basic Tags-HTML, U.R.L. concept. Hyperlink (Anchor) Tag & its attribute, Creating Email Hyperlinks. Introduction: Image & image formats. <img> tag & its attributes. Using Images as links. Image Map- Client side & Server side Image maps.

UNIT II:

Tables, Frame and Frame : Introduction to Tables. Table Tags: TABLE, TR, TH, TD & all Attributes. Rowspan, Colspan, Cellspacing, Cellpadding. Table examples, Overview of frames. FRAMESET & FRAME tags & its attributes. Simple frame Examples.

Introduction to forms. FORM tag & its attributes and tags (Action, Method, Name)

UNIT III:

Cascading Style Sheets: Declaration, Types of CSS: External CSS, Internal CSS, Inline CSS. Applications of CSS

Java Script: Introduction, Adding script to documents, Data types, operators, Variables, Input and Output statements, Looping statements: While, Do-While, For loop.

UNIT III:

Photoshop: The Photoshop Environment, Understanding Workspace, Pixel vs. Vector, File types, Selection Tools, Healing Tools Importing Files Understanding, Layers & Masking, How layers work, creating layers, blending modes, styles, renaming & grouping layers.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Teach yourself office 97/2000 for windows	Corey Sandler, Tambadgett, Jan Weingarten	BPB
2.	Microsoft Office 2000	COMPLETE	BPB
3.	Mastering Word 2000	Mansfield	BPB

Course Code	**DCA105**
Course Title	**Computer Programming**
Type of Course	Core
L T P	3 1 0
Credits	4
Course Prerequisites	Basic Knowledge about Computers
Course Objective(s)	To gain experience about structured programming. To help students to understand the implementation of Programming language. To understand various features in Programming Language.
Course Outcome (CO)	The students will be able to: 1. Illustrate the flowchart and to develop C programs. 2. Develop conditional and iterative statements to write C programs and exercise user defined functions to solve real time problems 3. Inscribe C programs that use Pointers to access arrays, strings and functions. 4. Exercise user defined data types including structures and unions to solve problems**.**

SYLLABUS

UNIT I:

Fundamentals of computer: Computer generations, History of languages, high- level, Low level, Assembly languages etc. Definition and properties. Principles of flowcharts. Flowcharting symbols, Algorithms.

Introduction To Programming Language: character Set, Constants, Types of constants, Variables and Keywords, data types. Instructions: Type Declaration Instruction, Arithmetic Instructions.

UNIT II:

Control structures: Decision making structures: If, If-else, Nested If –else, Switch.

Loop Control structures: While, Do-while, for, Nested for loop. Other statements : Break, Continue, goto, Exit

Arrays and Pointers: Arrays Initialization, Types of Array. Initializing Two Dimensional & Multidimensional Arrays, Introduction to Pointers. Pointers and Functions.

UNIT III:

Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Strings, Standard library String Functions: strlen (), strcpy (), strcat(),strcmp()

Functions: Definition, Passing values between functions, call by value, call by reference, Recursion

UNIT IV:

Structures And Unions: Declaring structure and its variables,

Arrays of structures. Introduction to Unions.

Input/Output: Getchar (), putchar (), printf (), scanf (), puts (), gets () Introduction to files and its operations.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Programming in C	Byron Gottfried,JitenderChhabra	Schuam out line series
2.	Let us C	Yaswant Kanetkar	BPB Publication
3.	A structured Programming approach using C	Behrouz Forouzan	Thomas learning

Course Code	**CSA111**
Course Title	**Digital Electronics**
Type of Course	CC
L T P	3 1 0
Credits	4
Course Prerequisites	Students should know about the various electronics components and physics concepts
Course objective(s)	Demonstrate the operation of simple digital gates, identify the symbols, truth table for gates; change binary, hexadecimal, octal numbers to their decimal equivalent and vice versa, demonstrate the operation of a flip-flop. Convert digital into analog and vice versa.
Course Outcome (CO)	The students will be able to: 1. Develop a digital logic 2. Apply it to solve real life problems 3. Understand, analyze and design various combinational and sequential circuits.

SYLLABUS

UNIT I:

Fundamental concepts: Introduction, Digital Signals, Basic Gates and derived Gates: AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR, Boolean Algebra

Number System and codes: Introduction to number systems, Decimal, Binary, Octal, Hexadecimal, And Conversation from one number system to another number system. Binary Arithmetic: Addition, Subtraction, Multiplication, Division, Half adder, full adder.1's and 2's compliment of Binary Number. Codes : BCD Code, Excess-3 Code, Gray Code Error detecting and correcting codes

UNIT II:

Combinational Logic Design: Standard Representation of logical functions, SOP, POS Forms, K-map Representation of logical functions, and Simplification of logical functions using K-map. Multiplexer, De-multiplexer. Encoder, Decoder

UNIT III:

Flip Flops: 1-Bit Memory Cell, Clocked S-R Flip Flop, J-K Flip Flop, Master Slave Flip Flop, D-type Flip Flop, T-type Flip Flop

Sequential Logic Design: Registers, Shift Register, Counter, Synchronous and asynchronous Counter, examples of each

UNIT IV:

Timing Circuits and Converters: 555 Timer, Digital To Analog Converter, Analog To Digital Converter

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Modern Digital Electronics	R.P. Jain	McGraw-Hill Science/Engineering/Math
2.	Microprocessor	B.RAM	DhanpatRai

DCA107 Fundamentals of Computer (Lab)

L T P

0 0 4

Objectives: To help students to understand the basic concepts of computer. This Programming language helps in solving a problem.

1. Introduction of Office & Internet usage
2. Introduction to MS Word.
3. Prepare time-table in Word.
4. Prepare Document by applying Formatting attribute.
5. Creating, Opening, Closing a word document.
6. Saving and Editing a word document
7. Insert header and footer in the document.
8. Introduction of PowerPoint.
9. Prepare Presentation in Powerpoint by applying Formatting Tools.
10. Presentation views in powerpoint
11. Create duplicate slides in powerpoint.
12. Make a master slide.
13. Apply animation to slides.
14. Insert background in powerpoint.
15. Introduction of Excel
16. Prepare Marksheet in Excel
17. Prepare Bill in Excel
18. Design a chart of population.
19. Apply conditional formatting in Excel
20. Sort the data in ascending and descending order in excel sheet.
21. Introduction to Access database
22. To manage data in tables using Access

23. To generate a report in access database

DCA109 Computer Programming Lab

L T P
0 0 4

Objectives: To help students to understand the implementation of language. This Programming language helps in solving a problem.

1. Write and execute program to show the working of input/output statements.
2. Write and execute programs to show the use of different types of operators (arithmetic, relational, logical, and conditional).
3. Write and execute programs based on conditional control statements (if, if-else)
4. Write and execute programs based on switch-case statements.
5. Write and execute programs based on for loops
6. Write and execute programs based on while loops.
7. Write and execute programs based on jumping control statements (break, continue).
8. Write and execute programs to implement one dimensional arrays.
9. Write and execute programs to implement two dimensional arrays.
10. Write and execute programs to show the use of pointers.
11. Write and execute programs to perform various functions on strings.
12. Write and execute programs based on use of functions (call by value)
13. Write and execute programs based on use of functions (call by reference)
14. Write and execute programs using recursive functions.

ENG123* Communication Skills-1 (Practical)

L T P
0 0 2

UNIT-I
Speaking and Discussion Skills:
Oral Presentation, Planning and organizing content for presentation, Use of audio /Visual Aids, Making Slides for presentation , Group Discussion ,Debate, Extempore speaking, Interview Skills, Mock interview, Mock Dialogues (Pair Speaking),Cue Card Speaking, Meeting/ Conferences.

UNIT-II
Listening Skills:
Listening to any recoded material and asking oral/written questions for listening comprehension.
Reading Skills:
Active Reading of passages for Reading comprehensions, paraphrase, Summary writing.

UNIT III
Writing Skills:
Guidelines of effective writing, Paragraph Writing, Email Writing.

UNIT-IV
Grammar and Vocabulary:
Parts of Speech, Tenses, GRE words (List of 50 Words).

Second Semester

Course Code	**DCA102**
Course Title	**Programming in C++**
Type of Course	Core
L T P	3 0 0
Credits	3
Course Prerequisites	Basic Knowledge about Computers
Course Objective(s)	To gain experience about structured programming. To help students to understand the implementation of Programming language. To understand various features in Programming Language.
Course Outcome (CO)	The students will be able to: 1. Understand how **C++** improves C with object-oriented features. 2. Learn how to write inline functions for efficiency and performance. 3. Learn the syntax and semantics of the **C++** programming language. 4. Learn how to design **C++** classes for code reuse.

SYLLABUS

Basics: Introduction to C++, Tokens, Identifiers, data types, control statements, functions, array, structure, union, pointers.

Classes and Objects: Classes, Structures and Classes, Unions and Classes are Related, Friend Functions, Friend Classes, Inline Functions, Constructors and its types, Static Class Members, When Constructors and Destructors are Executed, Scope Resolution Operator, Nested Classes, Local Classes, Passing and Returning Objects, Object Assignment

Arrays, Pointers, References and the Dynamic Allocation: Arrays of Objects, Pointers, References, Dynamic Allocation Operators, The Placement Forms of new and delete.

UNIT-II :

Function Overloading and Default Arguments: Function Overloading, Overloading Constructor Functions, Finding the Address of an Overloaded Function, Overload Anachronism, Default Arguments, Function Overloading and Ambiguity.

Operator Overloading: Creating Member Operator Function, Overloading Using a Friend Function, Overloading new delete, Overloading Special Operators & Comma Operator

UNIT-III :

Inheritance: Base-Class Access Control, Inheritance and protected members, Inheriting Multiple Base Classes, Constructors, Destructors and Inheritance, Granting Access, Virtual Base Classes.

Virtual Functions & Polymorphism: Virtual Functions, The Virtual Attribute is inherited, Virtual Functions are Hierarchical, Pure Virtual Functions, Using Virtual Functions, Early Vs Late Binding.

Templates: Generic Functions, Applying Generic Functions, Generic Classes, Typename and export Keywords, Power of Templates.

UNIT – IV :

Exception Handling: Fundamentals, Derived-Class Exceptions, Options, Terminate() and unexpected(),

uncaught_exception(), exception and bad_exception Classes, Applying Exception Handling.
The C++ I/O System Basics: Old Vs. Modern C++ I/O, Streams, Stream Classes, Formatted I/O, Overloading << and >>, Creating Manipulators.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Object Oriented Programming with C++	E. Balaguruswamy	Tata Mc. Graw Hill
2.	Object Oriented Programming using C++	R.Lafore	Galgotia Publications
3.	Mastering C++	A.R.Venugopal, Rajkumar, T. Ravishanker	TMH

Course Code	**DCA104**
Course Title	**Computer Networks**

Type of Course	Core
L T P	3 1 0
Credits	4
Course Prerequisites	Fundamentals of data and computer communications
Course Objective(s)	The objective of this course is to provide the students with the conceptual foundation for study of data communications. Also provide the knowledge about computer network related concepts.
Course Outcome (CO)	The students will be able to: 1. To focus on information sharing and networks. 2. Describe the functions of each layer of OSI and TCP/IP model. 3. Describe various layers and services provided by them in detail. 4. Understand how the data is routed. 5. Understand the various protocols that are used in application layer.

SYLLABUS

UNIT I:

Fundamentals of communication: Introduction to data communication and networking: Why study data communication?, Data Communication, Networks, Protocols and Standards, Standards Organizations. Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works Data communication networks and open system standards.

The OSI Model & TCP/IP Protocol, The layers and their functions. Signals: Digital signals, Analog signals. Data transmission: Asynchronous and Synchronous transmissions.

Data Communication System and its components, Data Flow, Computer network and its goals, Types of computer networks: LAN, MAN, WAN, Wireless and wired networks, broadcast and point to point networks, Network topologies.

UNIT II:

Study of Signals: Analog and Digital, Periodic and A periodic Signals, Analog Signals, Time and Frequency Domains, Composite Signals, Digital Signals.

Study of Digital transmission: Digital to Digital Conversion, Analog to Digital Conversion.

Study of Analog transmission: Digital to Analog Conversion, Analog to Analog Conversion.

Physical Layer:

Types of Signals, Multiplexing: Frequency Division, Time Division, Wavelength Division, Transmission Media: Twisted pair, Coaxial cable, Fiber optics, Wireless transmission (radio, microwave, infrared), Circuit Switching, Message Switching, Packet Switching & their comparisons**.**

UNIT III:

Introduction to networks and devices: Network classes, Repeaters, Hub, Bridges, Switches, Routers, Gateways Brouters Routing Algorithms, Distance Vector Routing , Link State Routing.

Data Link Layer: Design issues, Framing, Error detection and correction codes: checksum, CRC, hamming code, Data Link Layer Protocols: Sliding Window (Go Back N, Selective Repeat), Framing, Ethernet, Wireless LANs, Data transmission: Asynchronous and Synchronous transmissions.

Duties of network and transport layer: Routing algorithms, subnetting, IP addressing, hubs/repeaters, switches, bridges, routers.

UNIT IV:

Elements of transport protocols: addressing, connection establishment and release, flow control and buffering, multiplexing and de-multiplexing, crash recovery, Congestion Control Algorithms.

Application Layer: World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), network security

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Computer Networks, 4th Edition,	Andrew S. Tanenbaum	Pearson Education
2.	Data Communication & Networking, 4th Edition,	Behrouz A. Forouzan	Tata McGraw Hill.
3.	Computer Networking, 3rd Edition	James F. Kurose and Keith W. Ross	Pearson Education

Course Code	**ENG114***
Course Title	**Communication Skills-II**
Type of Course	AECC
L T P	2 0 0
Credits	2
Course Prerequisites	NA
Course Outcome (CO)	After completion of this course students will be able to: 1. Formulate an effective communication strategy for any message, in any medium, and in any situation. 2. Write clearly, concisely, and convincingly. 3. Develop skills of effective communication - both written and oral. 4. Acquaint with application of communication skills in outside world.

SYLLABUS

UNIT I:
Grammar: Parts of Speech, Use of appropriate tense, Voice , Reported Speech, Sentence Structure; Simple, Compound, Complex, Vocabulary-One word substitution.

UNIT II:
Writing Skills: Application for employment , Resume Writing , Paragraph Writing Construction-Kinds of Paragraphs, Preparing of Matter for meeting : Notice, agenda ,Conference

UNIT III:
Speaking Skills: Effective oral Presentation, Slide making, Use of audio Visual aids

UNIT IV:
Oral Communication and its Application:
Group Discussion, Customer Care Relations (PR Skills), Interview Skills (Conducting and appearing for interviews)and Telephone handling manners.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Business Communication	K. K. SinhaGalgoti	Galgotia Publishing Company
2.	Media and Communication Management	C. S. Rayudu -	Himalaya Publishing House, Bombay.
3.	Essentials of Business Communication	Rajendra Pal and J. S. Korlhalli -	Sultan Chand & Sons, New Delhi

Course Code	**MAT108***

Course Title	**Statistical Techniques in Computer Science**
Type of Course	AECC
L T P	5 0 0
Credits	5
Course Prerequisites	Basic knowledge of mathematics and statistics
Course Outcome (CO)	After completion of this course students will be able to: 1. Recognize the error in the number generated by the solution. 2. Compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method 3. Apply method of interpolation and extrapolation for prediction 4. Calculate mean, median and mode for individual series.

SYLLABUS

UNIT 1:

Introduction of Statistics: Definitions of Statistics, Importance of statistic, Advantages and Limitations. Scope of Statistics: Computer Science, Industry, Economy, Social Science.

UNIT II:

Data Condensation and Graphical Methods: Collection of Data, Types of Data Attributes and variables, Construction of Frequency, Cumulative and Relative, Frequency distributions. Graphical representation of Frequency distribution: Histogram, Frequency Polygon, Frequency Curve and Cumulative Frequency curves (Ogive curves)

UNIT III:

Measures of Central Tendency: Concept of central tendency. Arithmetic Mean, Median, Mode. Merits and Demerits, Measures of Dispersion, Concept of Dispersion: Range: Definition, Formulae and Computation for ungrouped and grouped data Standard Deviation: Definition, Formulae and Computation for ungrouped and grouped data Variance: Definition, Formulae and Computation for ungrouped and grouped data, Coefficient of variance: Definition, Formulae and Computation for ungrouped and grouped data.

UNIT IV:

Probability: Permutation and combination, Sample space, Events and Types of events. Classical definition of probability and axioms of probability, Theorems on Probability, Definition of Correlation, Types of Correlation, Karl Pearson's coefficient of correlations for ungrouped data and problems. Definition of Regression, Regression equations and problems, Analysis of Time Series: Definition and components of time series, Measures of trends Moving average method and least square method and problems.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1.	Fundamentals of Statistics	A.M. Gun, M.K.Gupta, B. Dasgupta	The World Press Private Limited.
2.	Statistical Methods	S.P. Gupta	McGraw Hill Education.
3.	Business Statistics	S. Shaha	B. S. Shah Prakashan

Course Code	**DCA106**
Course Title	**Introduction to Web Development**
Type of Course	Core

L T P	3 1 0
Credits	4
Course Prerequisites	Knowledge of Computers and Internet
Course Objective(s)	Create an HTML Documents, and establish adequate formatting for presentation purposes. To build web applications using CSS and JavaScript.
Course Outcome (CO)	The students will be able to 1. Use knowledge of HTML and CSS code and an HTML editor to create personal and/or business websites following professional and industry standards. 2. Use critical thinking skills to design and create websites. 3. Develop a dynamic webpage by the use of java script. 4. Gain knowledge about web hosting.

SYLLABUS

UNIT I:

Introduction to HTML: Overview of HTML. Rules of HTML documents. Structure of HTML documents, Tags-Definition, Classification of Tags.Basic Tags-HTML, U.R.L. concept. Hyperlink (Anchor) Tag & its attribute, Creating Email Hyperlinks. Introduction: Image & image formats. <img> tag & its attributes. Using Images as links. Image Map- Client side & Server side Image maps.

UNIT II:

Tables, Frame and Frame: Introduction to Tables. Table Tags: TABLE, TR, TH, TD & all Attributes. Rowspan, Colspan, Cellspacing, Cellpadding. Table examples, Overview of frames. FRAMESET & FRAME tags & its attributes. Simple frame Examples.

Introduction to forms. FORM tag & its attributes and tags (Action, Method, Name)

Cascading Style Sheets: Introduction to Cascading Style Sheets: Types of CSS, CSS Selectors, Universal Selector, ID Selector, Sub Selector, First-line and First-letter selector, Before and After Selector, CSS Properties, Type Properties, Background Properties, Block Properties, Box Properties, List Properties, Border Properties, Positioning Properties, ,Implementation Conversation of Table to CSS Layout, CSS Menu Design (Horizontal, Vertical).

UNIT III:

Java Script: Introduction to Client Side Scripting: Introduction to Java Script (JS), Java script Types, Variables in JS, Operators in JS, Conditions Statements, Java Script Loops, JS Popup Boxes, JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions, Using Java Script in Real-time, Validation of Forms.

UNIT IV:

Web Hosting: Web Hosting, Basics Types of Hosting Packages, Registering domains, Defining Name Servers Using Control Panel, Creating Emails in Cpanel Using FTP Client,

Maintaining a Website.

Photoshop: The Photoshop Environment, Understanding Workspace, Pixel vs. Vector, File types, Selection Tools, Healing Tools Importing Files Understanding, Layers & Masking, How layers work, creating layers, blending modes, styles, renaming & grouping layers.

Sr. no.	Name	AUTHOR(S)	PUBLISHER
1.	Web Technologies	Achyut S. Godbole, AtulKahate	Tata McGraw Hill
2.	Web Tech. & Design	C.Xavier	New Age
3.	Multimedia & Web Technology	Ramesh Bangia	Firewall Media

Course Code	**DCA112**
Course Title	**Office Automation**
Type of Course	Core
L T P	4 0 0
Credits	4
Course Prerequisites	Basic knowledge of computers
Course Outcome (CO)	The objective of study is to make students efficient in the working of MS-Word, MS-Excel, Power Point & MS Access

SYLLABUS

UNIT I: Introduction to Word processor, Uses of Ms- Word. Introduction to Ms-Word Windows: Title bar, Menu bar, Toolbar, Standard Toolbar, Formatting toolbar, The Ruler bar, Insertion point, Scroll Bars. Dialog Boxes, Drop-down lists, tabs. Basic Text Editing: Cut, Copy, Paste, Undo, Redo, Delete
Formatting: Character formatting by using Font dialog box. Paragraph Formatting by using Keeping text together, Adding borders and shading page and section formatting page setup
Numbering pages.
Searching and Proofreading Tools: Find and replace Searching for special character
Proofreading tools, Custom dictionary, Grammar Checking, Writing style, Thesaurus Dictionary

UNIT II: Working with Tables and Columns: History of table, creating a table, entering text in a table using table tools. Changing column's width with Auto fit, Gridlines, Merging Cells
Table Formatting:-Sorting tables, copying tables, deleting tables.
Mail merge

UNIT III: Introduction to Spreadsheet
Spreadsheet overview, starting excel, creating spreadsheet, excel menu. Working with Formulas and Functions: Introduction using basic formulae, advance formulae, designing formulae
Formatting: Types of formatting: Using borders, color and patterns, Conditional formatting
Creating and Formatting Charts: Introduction to charts. Creating charts, formatting charts, exploring charts.

UNIT IV: Introduction to Power point: Designing PowerPoint Presentations and addition of animations
Introduction to Access: Creation of files in MS-Access, Design a simple database, Manage the data in a table, Design a form, Generate a report.

RECOMMENDED BOOKS			
Sr. no.	**Name**	**AUTHOR(S)**	**PUBLISHER**
1	Teach yourself office 97/2000 for windows	Corey Sandler, Tambadgett, Jan Weingarten	BPB
2	Microsoft Office 2000	COMPLETE	BPB
3	Mastering Word 2000	Mansfield	BPB

DCA108 Programming in C++ (Lab)

L T P
0 0 4

Objectives: Acquire knowledge about the basic concept of writing a program. Understanding the practical use of functions, classes, objects, inheritance and polymorphism.

1. Write and execute simple program to show the working of input/output statements.
2. Write and execute programs to show the use of different types of operators.
3. Write and execute programs based on use of functions.

4. Write and execute programs to demonstrate function call by value and call by reference.
5. Write and execute programs to demonstrate inline functions.
6. Write and execute programs to demonstrate function overloading.
7. Write and execute programs to show concept of classes using public, private, protected members.
8. Write and execute programs to demonstrate use of constructor (parameterized and un parameterized constructor, copy constructor, multiple constructors in a class, and constructors with default parameters).
9. Write and execute programs to demonstrate use of destructor.
10. Write and execute programs to demonstrate use of static variables and static functions.
11. Write and execute programs to illustrate different types of inheritance.
12. Write and execute programs to illustrate different access specifiers in inheritance (public, private, protected).
13. Write and execute programs to show the use of pointers to classes.
14. Write and execute programs to show the use of this pointer.
15. Write and execute programs to show the use of friend function.
16. Write and execute programs to show the concept of friend class.
17. Write and execute programs to demonstrate method overloading in classes using different parameters and different return types.
18. Write and execute programs to show the use of virtual function and pure virtual function.
19. Write and execute programs to demonstrate operator overloading in classes with different operators.
20. Write and execute programs using concept of dynamic memory allocation.

DCA110 Introduction to Web Development Lab

L T P
0 0 4

Objectives: Acquire knowledge about the basic concept of writing a program. Understanding the practical use of tags , statements etc.

1. Write a HTML code that displays various formatting tags.
2. Write a HTML code to create ordered list.
3. Write a HTML code to create unordered list
4. Write a HTML code to create definition lists

5. Write a HTML code to create table having n rows and n columns.
6. Write a HTML code to create table showing cell padding and cell spacing
7. Write a HTML code to create admission form.
8. Write a HTML code to create a frame.
9. Write a HTML code to create image map.
10. Write a HTML code to create hyperlink among multiple pages.
11. Write a HTML code to create hyperlink to an image.
12. Write a HTML code to print biodata.
13. WAP in JavaScript to show a number is greater or not.
14. WAP in JavaScript to implement loops
15. WAP in JavaScript to show usage of if and if-else statements.
16. WAP in JavaScript to show usage of switch statement

ENG116* Communication Skills-II Practical

L	T	P
0	0	2

UNIT-I: Grammar:
To recognize part of speech of particular word in given sentence, To use appropriate tense , Exercise on- Voice, Reported speech and Sentence Structure, Vocabulary-One word substitution.

UNIT-II: Writing Skills:
Job Application, Resume Writing, Paragraph Writing, Preparing of Matter for meeting: Notice, agenda, Conference.

UNIT III: Speaking Skills: How to deliver an effective power point Presentation, Slide

making, Effective use of audio Visual aids

UNIT-IV: Oral Communication and its Application:
Group Discussion, Mock Interview (Conducting and appearing for interviews), and Role plays. Conducting a successful official meeting.