COMMUNITY COLLEGE (CC)

SECTOR: INFORMATION TECHNOLOGY

SPECIALIZATION: SOFTWARE DEVELOPMENT: CC/IT/SD

Certificate Level-III

1.1 COMMUNICATION SKILLS

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RATIONALE **4 - 2**

Interpersonal communication is a natural and necessary part of organizational life. Yet, communicating effectively can be challenging because of our inherent nature to assume, over react to and misperceive what actually is happening. Poor communication or lack of communication is often cited as the cause of conflict and poor teamwork. In today's team oriented workplace, managing communication and developing strategies for creating shared meaning are crucial to achieve results and create successful organizations. The goal of the Communicating Skills course is to produce civic-minded, competent communicators. To that end, students must demonstrate oral as well as written communication proficiency. These include organizational and interpersonal communication, public address and performance. The objectives of this subject are understanding how communication works, gaining active listening and responding skills, understanding the importance of body language, acquiring different strategies of reading texts and increasing confidence by providing opportunities for oral and written expressions

DETAILED CONTENTS

1. **COMMUNICATION SKILLS** **(12 Period)**
   - **1.1** Introduction and Definition of Communication, Process of Communication
   - **1.2** Objectives of Communication
   - **1.3** Media and Modes of Communication
   - **1.4** Channels of Communication
   - **1.5** Barriers to Communication
   - **1.6** Listening Skills
   - **1.7** Body language
   - **1.8** Humour in Communication

2. **Correspondence** **(10 Period)**
   - **2.1** Business Letters
   - **2.2** Personal letters (congratulations, invitations, seeking job, apology, condolence, advice, thanks giving)
   - **2.3** Office letters (requests, complaints)
   - **2.4** Notices

3. **Translation** **(10 Period)**
   - **3.1** Glossary of Technical and Scientific Terms (English and Hindi)
   - **3.2** Translation from Hindi to English

4. **Comprehension** **(10 Period)**

   Unseen passages of literacy, scientific, data/graph based for comprehension exercises

5. **Writing a paragraph of 100-150 words from given outlines (06 Period)**
   Topic may include noise pollution, deforestation, wild life, green house effect, desertification, water pollution, poverty, illiteracy, population explosion, effect of television etc.

6. **Drafting (12 Period)**
   - **6.1** Report Writing
   - **6.2** Inspection Notes
   - **6.3** Memos, Circulars, Notes and Notices
   - **6.4** Telegrams
   - **6.5** Press Release
   - **6.6** Agenda and Minutes of Meetings
   - **6.7** Applying for a Job

7. **Vision/ Mission Preparation (04 Period)**

LIST OF PRACTICALS (32 Period)

(Note: The following contents are only for practice. They should not be included in the final theory examination)

1. How to Seek Information from an Encyclopedia
2. Listening pre-recorded English language learning program
3. Paper Reading before an audience (reading unseen passages)
4. Study of Spelling Rules
5. Essentials of a Good Speech to respond and comprehend visual, oral themes and situations or stimulus and practice before select gathering
6. Exercises on use of different Abbreviations
7. Greetings for different occasions
8. Introducing oneself, others and leave taking
9. Exercises on writing sentences on a topic
10. Practice on browsing Information on Internet
11. Group Discussions
12. Mock Interviews
13. Telephone Etiquette-demonstration and practice
14. Situational Conversation with feedback through video recording
15. Presentation on a given theme (using PowerPoint)
16. Exercises leading to personality development like mannerism, etiquettes and body language etc.
17. Reading unseen passages
18. Writing (developing) a paragraph
19. Exercises on writing notices and telephonic messages

Note:

1. A communication laboratory may be set up consisting of appropriate audio- video system with facility of playing CDs/DVDs and a video camera for recording the performance of each student with play back facility. A set of CDs from any language training organization e.g. British Council etc. may be procured for use of students.
2. Elements of body language will be incorporated in all practicals
3. The writing exercises of practicals may also be included in Theory Examination.

LIST OF REFERENCE BOOKS

1. Communicating Effectively in English, Book-I by Revathi Srinivas; Abhishek Publications, Chandigarh.
2. High School English Grammar and Composition by Wren and Martin; S. Chand & Company Ltd., Delhi.
3. Communication Techniques and Skills by R. K. Chadha; Dhanpat Rai Publications, New Delhi.
4. English and Communication Skills, Book-II By Kuldip Jaidka, Alwainder Dhillon and Parmod Kumar Singla, Prescribed by NITTTR, Chandigarh & Published By Abhishek Publication, 57-59, Sector-17, Chandigarh
5. Essentials of Business Communication by Pal and Rorualling; Sultan Chand and Sons
6. The Essence of Effective Communication, Ludlow and Panthon; Prentice Hall of India
7. A Practical English Grammar by Thomson and Marlinet
8. Spoken English by V Sasikumar and PV Dhamija; Tata McGraw Hill

1.2 GENERAL SCIENCE & MATHEMATICS

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RATIONALE **4 - 2**

Applied physics includes the study of a large number of diverse topics all related to things that go on in the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which objects will behave. Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content.

The role of Chemistry and chemical products in every branch of engineering is expanding greatly. Now a day's various products of chemical industries are playing important role in the field of engineering with increasing number of such products each successive years.

The strength of materials, the chemical composition of substances, their behavior when subjected to different treatment and environment, and the laws of heat and dynamic energy have entered in almost every activity of modern life. Chemistry is considered as one of the core subjects for diploma students in engineering and technology for developing in them scientific temper and appreciation of chemical properties of materials, which they have to handle in their professional career. Effort should be made to teach this subject through demonstration and with the active involvement of students.

Applied Mathematics forms the backbone of engineering students. The curriculum of mathematics has undergone changes from time to time in accordance with growth of subject.

Note:- Teachers should give examples of engineering/technology applications of various concepts and principles in each topic so that students are able to appreciate learning of these concepts and principles.

DETAILED CONTENTS

A. PHYSICS **(21 Period)**

1. **Units and Dimension** **(04 Period)**
   - **1.1** Physical quantities
   - **1.2** Units - fundamental and derived units, systems of units (FPS, CGS, MKS and SI units)
   - **1.3** Dimensions and dimensional formulae of physical quantities
   - **1.4** Dimensional equations and principle of homogeneity, applications to conversion from one system of units to another, checking the correctness of physical relations and derivation of simple physical relations, limitations of dimensional analysis

1.5 Error in measurement, random and systematic errors, types of errors, propagation of errors, significant figures

2. Force and Motion (03 Period)

2.1 Concept of Scalar and Vector quantities

2.2 Circular motion: Angular displacement, angular velocity and angular acceleration

2.3 Relation between linear and angular variables (velocity and acceleration)

2.4 Application of various forces in lifts

3. Rotational Motion (03 Period)

3.1 Concept of translatory and rotating motion with examples

3.2 Definitions of torque, angular momentum and their relationship

3.3 Conservation of angular momentum (qualitative) and its examples

3.4 Moment of inertia and its physical significance, radius of gyration, Theorems of parallel and perpendicular axes (statements), Moment of inertia of rod, disc, ring and sphere (Formulae only).

3.5 Application of rotational motions in transport vehicles, trains and aeroplane turbine/engine

4. Work, Power and Energy (03 Period)

4.1 Work: definition and its SI units

4.2 Work done in moving an object on horizontal and inclined plane(incorporating frictional forces) with its application

4.3 Power: definition and its SI units, calculation of power with numerical problems

4.4 Energy: Definition and its SI units: Kinetic energy and Potential energy with examples and their derivation

4.5 Principle of conservation of mechanical energy (for freely falling bodies)

5. Thermometry (05 Period)

5.1 Difference between heat and temperature

5.2 Principles of measurement of temperature and different scales of temperature and their relationship

5.3 Types of thermometers (Concept only)

5.4 Types of thermometers (Concept only)

5.5 Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them.

5.6 Modes of transfer of heat (Conduction, convection and radiation with examples)

5.7 Co-efficient of thermal conductivity

6. Waves and Vibrations (03 Period)

6.1 Simple Harmonic Motion(SHM): definition, expression for displacement, velocity, acceleration, time period, frequency in S.H.M. Equation of simple harmonic progressive wave

6.2 Wave motion: transverse and longitudinal wave motion with examples, sound and light waves, velocity, frequency and wave length of a wave(relationship $v = n\lambda$) and their applications

6.3 Free, forced and resonant vibrations with examples

6.4 Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their application.

6.5 Ultrasonics – production (magnetostriction and piezoelectric methods)and their engineering and medical applications

B. CHEMISTRY **(19 Period)**

7. Basics Concepts **(02 Period)**

7.1 Definition of chemistry and its importance

7.2 Definition of matter, element, compound and mixtures, atom, molecule, ion, symbol, formula, valency and chemical equation

8. Atomic Structure and Chemical Bonding **(02 Period)**

8.1 Fundamental particles i.e. electron, proton and neutron, their characteristics (discovery is not included)

8.2 Electronic concept of valency

9. Water **(04 Period)**

9.1 Hard and soft water, types of hardness and its causes, disadvantages of hardness of water (i) in industrial use (ii) in boilers for steam generation with special reference to sludge and scale formation; foaming and priming in boilers

9.2 Methods to remove hardness of water (i) Clark's Process (ii) Permutit Process (iii) Soda Lime process (iv) Ion-Exchange resin process. Simple numerical problems related to soda lime process.

10. Environmental Chemistry. **(02 Period)**

10.1 General concept of pollution and pollutants

11. Metallurgy **(06 Period)**

11.1 A brief introduction of the terms: Metallurgy, mineral, ore, gangue or matrix, flux, slag, concentration (methods of concentrating the ores), roasting calcinations and refining as applied in relation to various metallurgical operations

11.2 Metallurgy of (i) Aluminium (ii) Iron

11.3 Definition of an alloy, purposes of alloying, composition and uses of alloys like magnalium, duralumin, alnico, invar and stainless steel

12. Fuels **(03 Period)**

12.1 Definition of a 'Fuel', characteristics of a good fuel and classification of fuels with suitable examples

C. MATHEMATICS (24 Period)

13. Algebra (06 Period)

13.1 Series: A.P. and G.P., nth term of AP and GP, , sum to nth term, Value of npr and ncr.

13.2 Determinants and Matrices – expansion of determinants (upto third order), properties of determinants, solution of equations (up to 3 unknowns) by Cramer's rule. Definition of matrix, addition, subtraction, multiplication of matrices (up to third order), minors and co-factors, inverse of a matrix by adjoint method (up to second order)

13.3 Scalar and vector product of two **/**three vectors

14. Co-ordinate Geometry (06 Period)

14.1 Equation of straight line in various standard forms (without proof), inter section of two straight lines, angle between two lines, perpendicular distance formula (without proof)

14.2 General equation of a circle and its characteristics. To find the equation of a circle, given:

*Centre and radius

* Three points lying on it

* Coordinates of end points of a diameter

14.3 Equations of conics (ellipse, parabola and hyperbola), simple problems related to engineering (standards forms only)

15. Differential Calculus (04 Period)

15.1 Definition of function; Concept of limits.

15.2 Differentiation by definition of xn , sin x, cos x, tan x, ex, logax only

15.3 Differentiation of sum, product and quotient of functions. Differentiation of function of a function.

15.4 Differentiation of inverse trigonometrical functions, Logarithmic differentiation, Exponential differentiation, Successive differentiation (upto third order only).

15.5 Applications:

(a) Maxima and minima

(b) Equation of tangent and normal to a curve (for explicit functions only) – Simple problems only

16. Integral Calculus (04 Period)

16.1 Integration as inverse operation of differentiation

16.2 Simple standard integrals and related problems

16.3 Simple integration by substitution, by parts and by partial fractions (for linear factors only)

16.4 Properties of definite integrals

17. Statistics (04 Period)

17.1 Measures of Central Tendency: Mean, Median, Mode
17.2 Measures of Dispersion: Mean deviation, Standard deviation
17.3 Co-efficient of rank correlation

LIST OF PRACTICALS (to perform minimum ten experiments) (32 Period)

1. To find the diameter of wire using a screw gauge
2. To find volume of solid cylinder and hollow cylinder using a vernier calipers
3. To determine the thickness of glass strip and radius of curvature using a spherometer
4. To verify parallelogram law of forces
5. To find the time period of a simple pendulum and determine the length of second's pendulum.
6. To find the velocity of sound by using resonance apparatus at room temperature.
7. To determine the viscosity of glycerin by Stoke's method
8. To determine the coefficient of friction on horizontal plane.
9. To determine the Young';s Modulus by Searles apparatus
10. To determine force Constant of spring using Hooke's Law
11. Volumetric analysis and study of apparatus used therein. Simple problems on volumetric analysis equation
12. Preparation of standard solution of oxalic acid or potassium dichromate
13. To analyse the inorganic mixture for two acidic and two basic radicals from the following radicals
14. a) Acidic Radicals CO3- -, SO4- -, NO3-, CH3 COO -, Cl-, Br-, Ib)
15. Basic Radicals NH4++, Pb+, Cu++, Cd++, As+++, Sb+++, Sn++, Al+++, Fe+++, Cr+++, Mn++, Ni++, Co++, Zn++, Ba++, Sn++, Ca++ and Mg++,
16. Determine the degree of temporary hardness of water by O'Heher's method
17. Estimation of total alkalinity of water volumetrically
18. Determine pH of a given sample by using pH meter
19. Determination of solubility of a solid at room temperature
20. Demonstration – Application of FeCl3 in etching process for designing circuits on PCB (Printed Circuit Board)

RECOMMENDED BOOKS

1. Applied Mathematics by Dr. RD Sharma, Dhanpat Rai Publications, Delhi
2. Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
3. Applied Mathematics-I (Hindi) by Dr. Kailash Sinha, Nav Bharat Publication, Meerut.
4. Engineering Mathematics by Vol. I & II by S Kohli, IPH, Jalandhar
5. Applied Mathematics, Vol. I & II by SS Sabharwal & Sunita Jain, Eagle Parkashan, Jalandhar
6. Text Book of Physics for Class XI (Part-I, Part-II) N.C.E.R.T
7. Text Book of Physics for Class XII (Part-I, Part-II) N.C.E.R.T
8. Applied Physics Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, New Delhi
9. Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi
10. Berkeley Physics Course, Vol. I, II &III, Tata McGraw Hill, Delhi
11. Comprehensive Practical Physics, Vol. I & II, JN Jaiswal, Laxmi Publishers

12. Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
13. Applied Physics I & II by RA Banwait & R Dogra, Eagle Parkashan, Jalandhar
14. Applied Physics by Jasmer Kaur and Bhupinder Singh, Lords Publications,Jalandhar
15. Engineering Physics by Vanchna Singh and Sheeetal Kumar, Cengage Learning India Pvt. Ltd. Patparganj, Delhi
16. Chemistry in Engineering by J.C. Kuriacose and J. Rajaram; Tata McGraw-Hill Publishing Company Limited, New Delhi
17. Engineering Chemistry by Dr. S. Rabindra and Prof. B.K. Mishra ; Kumar and Kumar Publishers (P) Ltd. Bangalore-40
18. A Text Book of Applied Chemistry-I by SS Kumar; Tata McGraw Hill, Delhi
19. A Text Book of Applied Chemistry-I by Sharma and Others; Technical Bureau of India, Jalandhar
20. Engineering Chemistry by Jain PC and Jain M,
21. Chemistry of Engineering by Aggarwal CV,
22. Chemistry for Environmental Engineers by Swayer and McCarty, McGraw Hill, Delhi
23. Progressive Applied Chemistry –I and II by Dr. G.H. Hugar; Eagle Prakashan, Jalandhar

1.3 INTRODUCTION TO COMPUTER SYSTEM

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1. **Introduction:** **(12 Periods)**
   Evolution of computers; Computer organization (basic concepts): CPU, Memory (RAM and ROM), I/O devices, concept of Booting.

2. **Input devices:** **(16 Periods)**
   Keyboard, Mouse, Light pen, Touch Screen, Graphics Tablets, Joystick, Microphone, OCR, Scanner, Smart Card reader, Barcode reader, Biometric sensor, web camera;

3. **Output Devices:** **(16 Periods)**
   Monitor/Visual Display Unit (VDU), LCD screen, Television, Printer (Dot Matrix Printer, Deskjet/Inkjet/Bubble jet Printer, Laser Printer), Plotter, Speaker;

4. **Memory Concepts:** **(16 Periods)**
   Units: Byte, Kilo Byte, Mega Byte, Giga Byte, Tera Byte, Peta Byte
   Primary Memory: Cache, RAM, ROM
   Secondary Memory: Fixed and Removable Storage- Hard Disk Drive, CD/DVD Drive, Pen Drive, Blue Ray Disk

5. **Input Output Ports/Connections:** **(16 Periods)**
   Serial, Parallel and Universal Serial Bus, PS-2port, Infrared port, Bluetooth, Firewire.

6. **Number System:** **(20 Periods)**
   Binary, Octal, Decimal, Hexadecimal and conversion between two different number systems
   Internal Storage encoding of Characters: ASCII, ISCII (Indian scripts Standard Code for Information Interchange), and UNICODE (for multilingual computing)
   Microprocessor: Basic concepts, Clock speed (MHz, GHz), 16bit,32bit, 64 bit processors;

RECOMMENDED BOOKS

1. SK Bose “Hardware and Software of Personal Computers” Wiley Eastern Limited, New Delhi.
2. Hall, Douglas “Microprocessors and Interfacing” McGraw Hill
3. Sukhvir Singh, Fundamental of Computers, Khanna Publishers, New Delhi
4. Levis Hahensteu, Computer Peripherals for Micro Computers, Microprocessor and PC
5. Rajaraman, FUNDAMENTALS OF COMPUTERS 4th Edition, Prentice Hall of India.
6. Peter Norton, INTRODUCTION TO COMPUTER 4th Edition, Tata McGraw Hill
7. Thomas C. Bartee, DIGITAL COMPUTER FUNDAMENTALS, McGraw Hill International.

1.4 FUNDAMENTALS OF C++

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1. Getting Started: (06 Periods)

C++ character set, C++ Tokens (Identifiers, Keywords, Constants, Operators), Structure of a C++ Program (include files, main function), Header files - iostream.h, iomanip.h, **cout, cin;** Use of I/O operators (<< and >>), Use of endl and setw (), Cascading of I/O operators, Error Messages; Use of editor, basic commands of editor, compilation, linking and execution.

2. Data Types, Variables and Constants: (06 Periods)

Concept of Data types; Built-in Data types: **bool, char, int, float** and **double;** Constants: Integer Constants, Character constants - \n, \t, \b), Floating Point Constants, String Constants; Access modifier: **const;** Variables of built-in data types, Declaration/Initialization of variables, Assignment statement; Type modifier: **signed, unsigned, long**

3. Operator and Expressions: (06 Periods)

Operators: Arithmetic operators (-,+,*,/,%), Unary operator (-), Increment (++) and Decrement (--) Operators, Relation operator (>,>=,<,<=,= =,!=), Logical operators (!, &&,||), Conditional operator: <condition>? <if true>:<else>; Precedence of Operators; Automatic type conversion in expressions, Type casting; C++ shorthands (+=, -=, *=, /=, %=).

4. Flow of control: (08 Periods)

Conditional statements: **if-else**, Nested **if**, conditional operator, **switch..case..default**, Nested **switch..case, break** statement (to be used in **switch..case only**); Loops: **while, do - while , for** and Nested loops

5. Inbuilt Functions: (06 Periods)

Header file Categorization	**Header**	**Function**
Standard input/output functions	stdio.h	gets (), puts ()
Character Functions	ctype.h	isalnum (), isalpha (), isdigit (), islower (), isupper (), tolower (), toupper ()
String Functions	string.h	strcpy (), strcat (), strlen (), strcmp (), strcmpi (), strrev (), strlen (), strupr (), strlwr ()
Mathematical Functions	math.h	fabs (), pow (), sgrt (), sin (), cos (), abs ()
Other Functions	stdlib.h	randomize (), random (), itoa (), atoi ()

6. User Defined Functions: (06 Periods)

Defining a function; function prototype, Invoking/calling a function, passing arguments to function, Specifying argument data types, default argument, constant argument, call by value, call by reference, returning values from a function, calling functions with arrays, scope rules of functions and variables local and global variables. Relating the Parameters and return type concepts in built-in functions.

7. Structured Data Type: **(06 Periods)**

Arrays: Introductory to Array and its advantages.

One Dimensional Array : Declaration/initialization of One-dimensional array, Inputting array elements, Accessing array elements, Manipulation of Array elements (sum of elements, product of elements, average of elements, linear search, finding maximum/minimum value), Declaration/Initialization of a String, string manipulations (counting vowels/ consonants/digits/special characters, case conversion, reversing a string, reversing each word of a string)

Two-dimensional Array: Declaration/initialization of a two-dimensional array, inputting array elements, Accessing array elements, Manipulation of Array elements (sum of row element, column elements, diagonal elements, finding maximum/minimum values)

8. User-defined Data Types: User defined data type **(08 Periods)**

Structure: Defining a Structure (Keyword Structure), Declaring structure variables, Accessing structure elements, Passing structure to Functions as value and reference argument/parameter, Function returning structure, Array of structures, passing an array of structure as an argument/ a parameter to a function, Defining a symbol name using **typedef** keyword and defining a macro using **#define** directive.

9. Concept of Object Oriented Programming: **(12 Periods)**

Data hiding, Data encapsulation, Class and Object, new and delete operator, Inline Function, Instance Function, Virtual Function, Virtual Class, Abstract class and Concrete class, Polymorphism (Implementation of polymorphism using Function & Operator Overloading an example in C++); Inheritance & Its Types, Advantages of Object Oriented Programming over earlier programming methodologies.

LIST OF PRACTICALS **(32 Periods)**

Note: Practical Session will be exercised with all above theoretical aspect of C++. Lump sum 15-20 practical should be executed.

RECOMMENDED BOOKS

1. Object Oriented Programming with C++, Robort Lafore, Galgotia Pub.
2. Object Oriented Programming with C++, E. Balaguruswamy, TMH.

1.5 FUNDAMENTALS OF DBMS

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1. Introduction: (16 Periods)

Database V/s File system, Architecture of DBMS(External, Conceptual, Internal), Data Independence (Logical Physical) DBA and his responsibility, DBMS structure (DDL Compiler, Data manager, File manager, Disk Manager, Query Processor).

2. Database Models (24 Periods)

Entity, Entity Set, Attributes, Keys (Primary, Secondary, Candidate, Super, Alternate), Mapping cardinalities, N array relationships, ER Diagram, Hierarchical Model ,Relational Model, Network Model, Object oriented Model, Mapping of ER diagrams to tables.

3. Functional Dependencies and Normalization of Relational Databases: (28 Periods)

Anomalies in Design, Data Redundancy, Functional Dependency, Logical implications, Closure of FD, Canonical Form, Full and Partial FD, Type of Attributes- Prime, Nonprime, Simple, Composite, derived; 1NF, 2NF, 3NF, BCNF, Decompositions, lossless decomposition and dependency preservance.

4. Transition Processing & Concurrency Control: (28 Periods)

Integrity rules (Entity integrity, Referential Integrity) Union, Difference, Intersection, Cartesian product, Projection, Selection, Joins- Inner join, left & right join.

Type calculus, Type calculus Formula, Domain calculus, SQL, Basic data retrieval, Data manipulation, views.

Recovery techniques, check points, concurrency control, View & conflict serializability, Lock, based concurrency control, strict two phase locking, multiple granularity locking, Time stamp based concurrency control.

RECOMMENDED BOOKS

1. Bipin C. Desai, “An Introducation to Database Systems”, Galgotia Publications Nt.Ltd.
2. Elmasri Navathe, “Fundemental of Database Systems”, Pearson Edition.
3. C.J. Date, “An Introduction to Database System” (7 th Edition) Pearson Edition.

2.1 CONCEPT OF MULTIMEDIA

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1. Introduction: (14 Periods)

Picture/Graphics, Audio, Video; Basic concepts of Images: Digital Images and Digital Image Representation

Image Formats: TIFF, BMP, JPG/JPEG, GIF, PIC. PDF, PSD;

Applications: Poster Design, Still pictues, colored layout, Designing of - Books, magazines brochures, children's literature, narrative text handling, scripts in Indian Languages, picture books, comics, illustrations with photographs, scientific illustrations, conceptual illustrations, handling of assignment for the market;

2. Concept of Image and Graphic Tools: (14 Periods)

Image Scanning with the help of scanner: Setting up Resolution, Size, File formats of images; image preview, Bifocal, Grey Scale and color options, Capturing images using scanners; Animation, Morphing and Applications

Graphic Tools: Image Editing Software (Photoshop / CorelDraw), GIMP

Basic Concepts of Image Creation: An Introduction, creating, opening and saving files, Menus, Toolbox, Color control icons, Mode control icons, Window controls icons; creating new images,

3. Image Editing: (20 Periods)

Image Handling: Cropping, adjusting image size, increasing the size of the work canvas, saving an image;

Operations on Layers: Adding new layers, dragging and pasting selected objects on to layers, dragging layers between files, Viewing, hiding, editing, moving, copying, duplicating, deleting, merging layers, rotating selections, scaling an object, preserving layers, , using adjustment layers;

Channels and Masks: Channel palette, showing and hiding channels, splitting channels in to separate image, merging channels, creating a quick mask, editing masks using quick mask mode;

Painting and Editing: Brushes palette, brush shape, creating and deleting brushes, creating custom brushes, setting brush options, saving, loading and appending brushes, Options palette; Opacity, pressure, or exposure, paint fade-out rate, making, adjusting, moving, copying extending, reducing , pasting and deleting selections using selection tools, softening the edges of a selection, hiding a selection border;

4. Concept of Audio & Video: (16 Periods)

Sound: Recording Sound using Sound Recorder (Capture), Sound capture through sound editing software (ex: Sound forge), Sound editing, Noise correction, Effect enhancement;

Sound File Format: AIFF (Audio Input File Format from Apple Mac), MIDI, WAV, MP3, ASF (Streaming format from Microsoft). Importing audio files from external devices and saving them.

Sound Quality: CD Quality, Radio Quality, Telephone Quality;
Voice Recording Software: Philips/Dragon, MIDI Player, Sound Recorder, MONO & Stereo.

LIST OF PRACTICALS **(32 Periods)**

Note: Practical Session will be exercised with all above theoretical aspect of Multimedia using Photoshop/CorelDraw. Lump sum 15-20 practical should be executed.

RECOMMENDED BOOKS

1. Mccarty T.P- Multimedia Communication (Johnwiley)
2. Andleigh P.k & Thakrar K, Multimedia Systems Design.

2.2 INTERNET & NETWORK

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1. Introduction: (16 Periods)

Computer Networking : Networking - a brief overview; Evolution of Networking: ARPANET, Internet, Interspace, Different ways of sending data across the network with reference to switching techniques (Circuit, Message and Packet switching)

Network Topologies - Bus, Star, Tree;

Types of Network - LAN, MAN, WAN, PAN;

2. Networking Components: (22 Periods)

Data Communication terminologies: Concept of Channel, Baud, Bandwidth (Hz, KHz, and MHz) and Data transfer rate (bps, kbps, Mbps, Gbps, Tbps)

Transmission media:

Wired Technologies - Co-Axial, Ethernet Cable, Optical Fiber;

Wireless Technologies - Blue Tooth, Infrared, Microwave, Radio Link, Satellite Link;

Network Devices - Modem, RJ45 connector, Ethernet Card, Hub, Switch, Repeater, Gateway - and their functions.

Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, Remote Login (Telnet), Internet, Electronic mail protocols such as SMTP, POP3, Protocols for Chat and Video Conferencing, VoIP protocols such as Wi-Fi and WiMax

Internet Application: SMS, Voice Mail, Electronic Mail, Chat, Video Conferencing;

3. Wireless / Mobile Communication: (08 Periods)

GSM, CDMA, GPRS, WLL, 1G, 2G and 3G, 4G

4. Security & Web Services: (18 Periods)

Network Security Concepts: Threats and prevention from Viruses, Worms, Trojan horse, Spams, Use of Cookies, Protection using Firewall; India IT Act, Cyber Law, Cyber Crimes, IPR issues, Hacking.

Web Services: WWW, Hyper Text Markup Language (HTML), eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP), HTTPS; Domain Names; URL; Protocol Address; Website, Web browser, Web Servers; Web Hosting, Web Scripting - Client side (VB Script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social networking)

LIST OF PRACTICALS **(32 Periods)**

1. Recognize the physical topology and cabling (coaxial, OFC, UTP, STP) of a network.
2. Recognition and use of various types of connectors RJ-45, RJ-11, BNC.
3. Recognition of network devices (Switches, Hub, Routers of access points for Wi-Fi
4. Making of cross cable and straight cable
5. Install and configure a network interface card in a workstation.
6. Identify the IP address of a workstation and the class of the address and configure the IP Address on a workstation
7. Study and Demonstration of sub netting of IP address
8. Connectivity troubleshooting using PING, IPCONFIG, IFCONFIG
9. Installation of Network Operating System (NOS)
10. Visit to nearby industry for latest networking techniques

RECOMMENDED BOOKS

1. Computer Networks by Tanenbaum, Prentice Hall of India, New Delhi
2. Data Communications and Networking by Forouzan, (Edition 2nd and 4th), Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Data and Computer Communication by William Stallings, Pearson Education, New Delhi
4. Networking Essentials – BPB Publications New Delhi
5. Computer Network and Communications By V. K. Jain and Narija Bajaj, Cyber Tech Publications, New Delhi.

2.3 BASIC WEB PROGRAMMING

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1. Introduction: (16 Periods)

www, Hyper Text Transfer Protocol (HTTP), File Transfer Protocol (FTP), Domain Names, URL, IP Address, Website, Web browser, Web Server, Web Hosting.

2. HTML: (80 Periods)

Introduction, content creation, HTML, creating HTML document using a Text Editor, Saving HTML document, Editing a HTML document, Viewing HTML document in a Web Browser, Switching between text editor and web browser windows to reflect changes.

Web Page Authoring Using HTML:

Basic Concepts: Concept of tags and attributes, Difference between Container tag and Empty tag.

Structural Tags of HTML:

<HTML>, <HEAD>, <TITLE>, <BODY> ; Attributes of <BODY> (BGCOLOR, BACKGROUND, LINK, ALINK, VLINK)

Inserting Breaks:

Line break
, Page break <P> Attributes of <P> (ALIGN), Section break <HR>; Attributes of <HR> (WIDTH, ALIGN, SIZE, NOSHADE, COLOR)

Formatting Tags of HTML:

<SMALL>, <BIG>, <B>, <I>, <U>, <EM>, <BLOCKQUOTE>, <PRE>, <SUB>, <SUP>, <STRIKE>, <ADDRESS>, Adding Comments in HTML (<!-- -->), Heading tag (<H1> to <H6>); Attributes of Heading tag (ALIGN), <FONT> tag; Attributes of <FONT> (SIZE, COLOR, FACE).

Creating Lists:

Ordered List : <OL>, <LI>, Attributes of <OL> (TYPE, START, VALUE); Unordered Lists : <UL>, <LI>, Attributes of <UL> (TYPE - Disc, Circle, Square); Definition List: <DL>, <DT>, <DD>

Creating Links:

Ordered List: <OL>, <LI>, Attributes of <OL> (TYPE, START, VALUE);

Unordered List : <UL>, <LI>, Attributes of <UL> (TYPE - Disc, Circle, Square);

Definition List : <DL>, <DT>, <DD>

Creating Links: Internal linking using <A NAME> and <A HREF>; External linking using <A HREF>; E-Mail linking using <A HREF>; Concept of URL; Absolute Links & Relative Links

Inserting Images: Inserting inline Images using <IMG>; Attributes of <IMG> (SRC, ALIGN, WIDTH, HEIGHT, ALT, BORDER)

Adding Music: Adding music using <A HREF>, adding music using <EMBED>; Attributes of <EMBED> (SRC, WIDTH, HEIGHT, LOOP, AUTOSTART, HIDDEN)

Creating Tables:

Creating Table using <TABLE>; Attributes of <TABLE> (BORDER, BGCOLOR, BACKGROUND, CELLSPACING, CELLPADDING, WIDTH, HEIGHT) Creating rows and columns in table using <TR>, <TD>, <TH>; Attributes of <TR>, <TD>, <TH> (ALIGH, VALIGN, COLSPAN, ROWSPAN) Adding headings for a table using <CAPTION>; Attribute of <CAPTION> (ALIGN)

Frames:

Dividing the window into two or more frames using <FRAME> and <FRAMESET>, Use of percentage dimensions and relative dimensions while dividing the window; use of <NOFRAMES>, </NOFRAMES>; Attributes of <FRAME> (SRC, NAME, FRAMEBORDER, MARGINHEIGHT, MARGINWIDTH, SCROLLING, NORESIZE); Attributes of <FRAMESET> (ROWS, COLS, BORDER, FRAMEBORDER);

Forms:

Forms are used for data collection which can be written to a file, can be submitted to a database or can be emailed; Creating Forms using <FORM>, Attributes of <FORM> (NAME, ACTION, METHOD), Creating Form Interface elements - text box, password box, checkbox, radio button, button, submit button, reset button, hidden, file using the <INPUT>; Attributes of <INPUT> applicable with different interface elements (NAME, SIZE, VALUE, ALIGN, MAXLENGTH, CHECKED, TYPE); multiline text area using <TEXTAREA>, Attributes of <TEXTAREA> (NAME, ROWS, COLS, WRAP); dropdown list of scroll list using <SELECT> and <OPTION>; Attributes of <SELECT> (NAME, SIZE, MULTIPLE/SINGLE>

Document Object Model

Concept and Importance of Document Object Model, Dynamic HTML documents;

Cascading Style Sheets

Introduction to Cascading Style Sheet (CSS): Creating inline, embedded and external cascading style sheets using <STYLE>, <DIV>, <SPAN> and <LINK>; Attribute of <DIV> and <SPAN> (STYLE); Attributes of <LINK> (REL, TYPE, HREF);

Font Properties: FONT-FAMILY, FONT-STYLE, FONT-SIZE, FONT-VARIANT, FONTWEIGHT and COLOR

Text Properties: COLOR, WORD-SPACING, LETTER-SPACING, TEXT-DECORATION, VERTICAL ALIGN, TEXT-TRANSFORM; TEXT-ALIGN, TEXT-INDENT, LINE-HEIGHT;

Background Properties: BACKGROUND-COLOR, BACKGROUND-IMAGE, BACKGROUND-REPEAT;

Margin Properties: MARGINS (all values);

Padding Properties: PADDING (all values);

Border Properties: BORDER (all values);

Positioning: Absolute and Realtive

Additional Features: Assigning Classes;

3. XML-eXtensible Markup Language: (16 Periods)

Introduction, Features, Advantages;

Structure of XML: Logical Structure, Physical Structures;

RECOMMENDED BOOKS

1. O LEVEL MODULE - M 1.2 - INTERNET & WEB PAGE DESIGNING BY V.K.JAIN – BPB PUBLICATIONS.
2. INTERNET FOR EVERYONE - ALEXIS LEON AND MATHEWS LEON, VIKAS PUBLISHING HOUSE PVT. LTD., NEW DELHI
3. INTERNET FOR DUMMIES - PUSTAK MAHAL, NEW DELHI

2.4 OFFICE APPLICATION-I

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1. Word Processing: **(48 Periods)**

- Design, create and modify a range of business documents
- Displaying Different Views of a Document
- Creating and Saving a Document
- Selecting, Modifying, Finding and Replace Text
- Align Text Using Tabs,
- Display Text as List Items
- Apply Borders and Shading
- Preview a document, and adjust its margins and orientation.
- Insert & Format a Table
- Convert Text to a Table
- Check Spelling and Grammar
- Use the Thesaurus
- Print with default or custom settings
- Modify the Layout of a Paragraph – Tabs, Headers, Footers
- Apply Styles & Manage Formatting
- Document Templates
- Insert contents, page and section breaks
- Apply Character Formatting
- Clip Art and its usage
- Inserting Special Characters and Graphical Objects, Symbols, Illustrations

2. Spreadsheet: **(48 Periods)**

- Construct a spreadsheet and populating Cell Data
- Customize the Interface
- Formatting Cells - Search Worksheet Data, Changing Fonts
- Modify Rows and Columns
- Managing Worksheets and Workbooks
- Applying Formulas and Functions
- Inserting Currency Symbols
- Merging cells
- Spell Check a Worksheet
- Add Borders and Colour to Cells
- Printing options to output a chart, worksheet, workbook, according to specifications
- Set Page Breaks, Page Layout Options

- Manage Workbook Views
- Apply Cell and Range Names
- Auto Sum in Cells
- Calculate Data Across Worksheets
- Sort or Filter Worksheet or Table Data
- Create, Modify and Format Charts
- Create, modify and format spreadsheets using the full range of the software formatting features including conditional formatting for example Hide /unhide/freeze rows and columns
- Using multiple worksheets and linking cells
- Sharing worksheet data with other users

2.5 PRESENTATION & COMMUNICATION-I

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1. Presentation: (56 Periods)

- Getting started with Presentations
- Identify elements of the user interface, view a presentation,
- save a presentation, use Microsoft PowerPoint help
- Creating a Basic Presentation,
- Select a presentation type, enter text, edit text, format text placeholders, add slides to apresentation, arrange slides, work with themes
- Formatting text on slides, apply character styles, format paragraphs
- Adding Graphical Objects to a presentation, Insert images into a presentation, add shapes
- Adding visual style to text in a presentation
- Edit, format, group, arrange, animate graphical objects on a slide
- Insert a table, format tables, import tables from other applications

2. E-Mail Messaging: (40 Periods)

- Getting Started with Messaging, identify the user interface, identify the outlook ribbon, identify the tabs and commands in the message form, using help
- Creating an email message, formatting, check spelling and grammar, attach a file,
- Sending and receiving email messages, read, reply to and forward, delete and print an email message
- Organizing Email Messages, move email messages into folders, open and save an attachment
- Managing contacts, add a contact, sorting and finding contacts, find the geographical location of a contact, update contacts
- Work with the calendar, schedule an appointment, categorize and edit appointments, share and print a calendar
- Respond to a meeting request, propose a new meeting time, manage meetings
- Create & edit a task, note and a journal entry
- Modify message settings, delivery options, change the message format, out of the office notification, create a contact group, insert a hyperlink