Kalinga University Atal Nagar (C.G.)

SCHEME OF EXAMINATION
& SYLLABUS

of

Diploma in
Computer Science & Engineering

UNDER

FACULTY OF ENGINEERING & TECHNOLOGY

w.e.f. Session 2021-22

Kalinga University, Raipur
Diploma in Computer Science & Engg. (3 yrs Programme)
w.e.f 2021-22 Session

SEMESTER -I (Common for all branches)						
Code No.	Paper	Credits	External Marks	Practical	Internal Marks	Total Marks
DICS101	Communication Skills - I	3	70		30	100
DICS102	Applied Mathematics-I	3	70		30	100
DICS103	Applied Physics -I	3+1	70	50	30	150
DICS104	Applied Chemistry -I	3+1	70	50	30	150
DICS105	Engineering Drawing -I	3+1	70	50	30	150
DICS106	Computer Fundamentals and Applications	2+1	50	50		100
DICS107	Workshop Practice -I	1		50		50
	Total	**22**	**400**	**250**	**150**	**800**

SEMESTER –II						
Code No.	Paper	Credits	Internal Marks	Practical	External	Total Marks
DICS201	Communication skills – II	3	30		70	100
DICS202	Applied Maths-II	3	30		70	100
DICS203	Applied Physics –II	3+1	30	50	70	150
DICS204	Applied Chemistry –II	3+1	30	50	70	150
DICS205	Basic Electrical Engineering	3+1	30	50	70	150
DICS206	Programming in C	3+1	30	50	70	150
	Total	**22**	**180**	**200**	**420**	**800**

SEMESTER –III						
Code No.	Paper	Credits	Internal Marks	Practical	External	Total Marks
DICS301	Operating System	3+1	30	50	70	150
DICS302	Digital Electronics-I	3+1	30	50	70	150
DICS303	Data Structure using C	3+1	30	50	70	150
DICS304	Microprocessor-I	3	30		70	100
DICS305	Data Communication	3	30		70	100
DICS306	Computer Workshop	2+1	30	50	70	150
	Total	**21**	**180**	**200**	**420**	**800**

SEMESTER – IV

Code No.	Paper	Credits	Internal Marks	Practical	External	Total Marks
DICS401	Object Oriented Programming in C++	3+1	30	50	70	150
DICS402	Windows & Linux Operating System	3+1	30	50	70	150
DICS403	RDBMS	3+1	30	50	70	150
DICS404	Multimedia Application	3+1	30	50	70	150
DICS405	Computer Organization	3	30		70	100
DICS406	Computer Peripheral & Interface Devices	3	30		70	100
	Total	**22**	**180**	**200**	**420**	**800**

SEMESTER –V

Code No.	Paper	Credits	Internal Marks	Practical	External Marks	Total Marks
DICS501	Computer Networks	3	30		70	100
DICS502	Visual Basic	3+1	30	50	70	150
DICS503	Oracle	3+1	30	50	70	150
DICS504	Internet & Web Designing	3+1	30	50	70	150
DICS505	Software Engineering	3	30		70	100
DICS506	Industrial Training	2				150
	Total	**20**	**150**	**150**	**350**	**800**

SEMESTER –VI

Code No.	Paper	Credits	Internal Marks	Practical	External Marks	Total Marks
DICS601	Entrepreneurship Development & Management	2	30		70	100
DICS602	Computer Graphics	3+1	30	50	70	150
DICS603	Microprocessor-II	3+1	30	50	70	150
DICS604	.Net	3+1	30	50	70	150
DICS605	Visual C++	3	30		70	100
DICS606	Major Project	6	50		100	150
	Total	**23**	**200**	**150**	**450**	**800**

SEMESTER-I

COMMUNICATION SKILL-I

UNIT-I

Passage for Comprehension:-

(1) Language of Science
(2) Robotic Revolution
(3) Designing a Car
(4) New Wonders of camera
(5) Non-conventional sources of Energy
(6) Our Environment
(7) Entrepreneurship
(8) Safety practices

UNIT-II

Short-Stories :-

(1) Selfish Giant-Oscar Wilde
(2) A Letter to God-Gregario Lapex Y-Fuentes An astrologer's Day –R.K. Naragyan

UNIT-III

Applied Grammar :-

(1) Determiners
(2) Auxiliaries
(3) Tenses
(4) Passive
(5) Prepositions
(6) Subject-verb Agreement

UNIT-IV

Letter Writing:-

(1) Application (For Job/Leave)
(2) Letter of Enquiry and replies
(3) Letter for Order Placement
(4) Letter of Complaints (To Editor/ Appropriate Authorities)

UNIT-V

Report Writing :-

(1) Writing Progress – Report of a job
(2) General outline for preparing A Project Report.

Reference Books
1. Communication Skill for Teaching Students Book-I. M/s Somalia Publications. Pvt. Ltd.,   Bhopal.
2. Living English Structure –W.S. Allen
3. Practical English Grammar (Exercises I by Thomson & Martinet)
4. English conversation practice by Grant Taylor.

APPLIED MATHEMATICS-I

UNIT-I

Algebra-

Determinants and Matrices-expansion

Determinants and Matrices-expansion of determinants(upto third order)using sarrus Rank, expansion method and pivotal condensation method. Properties of determinants ,solutions of equations (up to 3 unknowns)by Cramers's rule. Definition of matrix, addition, subtraction and multiplication of matrices(up to third order).inverse of a matrix by Adjoint method and elementary row transformations. Solution of equations(up to 3 unknowns)by Matrix method

UNIT-II
 Logarithm
general properties of logarithms
Partial fractions
(linear factors, repeated linear factors ,non reducible quadratic factors)
To resolve proper fraction into partial fraction with denominator containing non repeated linear factors to resolve improper fraction into partial fraction

UNIT-III
Trigonometry
Trigonometric ratios of any angle relation between degree and radian
Fundamental identities examples based on fundamental identities factorization
And defactorization formulae inverse trigonometrie ratios value of inverse trigonometric ratios

UNIT-IV
 Vectors
Definition of vector and scalar quantities. addition and subtraction of vectors. Dot product and cros product of two vectors. Thumb rule, Angle between two vectors, application of dot and cross product in engineering problems
Circle
Equation of circle in standard form centre radius form diameter form
General equation of circle

UNIT-V
 Complex Numbers
Definition, Real and Imaginary parts of a complex number, polar and Cartesian representation
of a complex number and conversion from one to the other, conjugate of a complex
number, modules and argument of a complex number.

Reference Books:-
- Mathematics for Polytechnic Volume I, TTTI Publication
- Applied Mathematics, EEB Publication , Bhopal
- Differential Calculus, By Gorakh Prasad
- Integral Calculus, By Gorakh Prasad
- Coordinate Geometry, By. S.L. Loney

APPLIED PHYSICS-I

UNIT-I Units and Dimensions: Physical quantities, Fundamental and derived units, Systems of units (FPS, CGS, MKS and SI units) , Dimensions and dimensional formulae of physical quantities (area, volume, velocity, acceleration, momentum, force, impulse, work, power, energy, surface tension, coefficient of viscosity and strain) Principle of homogeneity , Dimensional equations and their applications, conversion from one unit to another unit for density, force, pressure, work, power, energy, velocity, acceleration , Limitations of dimensional analysis

UNIT-II
Force and Motion: Scalar and vector quantities – examples, addition and multiplication (scalar product and vector product) of vectors. Force, resolution and composition of forces – resultant, parallelogram law of forces. Equilibrium of forces, Lami's theorem. Newton's Laws of motion – concept of momentum, Newton's laws of motion and their applications, determination of force equation from Newton's second law of motion; Newton's third law of motion conversion of momentum, impulse and impulsive forces, simple numerical problems based on third law. Projectile, horizontal and oblique projections and equation of trajectory . Derivation of time of flight, maximum height and horizontal range , Circular motion, Relation between linear and angular velocity and linear acceleration and angular acceleration, Centripetal force (derivation) and centrifugal force, Banking of roads

UNIT-III
Work, Power and Energy: Work: definitions and its SI units, Work done in moving an object on horizontal and inclined plane (incorporating frictional forces). Power: definitions and its SI units, calculation of power in simple cases. Energy: Definitions and its SI units: Types: Kinetic energy and Potential energy, with examples and their derivation, Principle of conservation of mechanical energy (for freely falling boDICSs), transformation of energy from one form to another

Properties of Matter: Elasticity, definition of stress and strain , Different types of modulus of elasticity. Explanation of stress – strain diagram. Pressure – its units, gauge pressure, absolute pressure, atmospheric pressure, Bourdon's pressure, manometers and barometer gauges. Surface tension – its units, measurement of surface tension by capillary tube method, applications of surface tension, effect of temperature and impurity on surface tension . Fluid motion, stream line and turbulent flow, Reynolds number. Viscosity and coefficient of viscosity; derivation of terminal velocity; effect of temperature on viscosity.

UNIT-IV
Waves and vibrations: Generation of waves by vibrating particles , Wave motion with examples, Types of wave motion, transverse and longitudinal wave motion with examples . Velocity, frequency and wave length of a wave (relationship $v = \eta\lambda$). Sound and Light waves. Simple harmonic motion: definition, expression for displacement, velocity, acceleration, time period, frequency in S.H.M. Vibration of cantilever and beam, determination of time period of a cantilever. Free, forced and resonant vibrations with examples

Rotational Motion: Definitions of torque, moment of inertia, radius of gyration, Derivation of rotational kinetic energy and angular momentum, Conservation of angular momentum (qualitative). Theorems of parallel and perpendicular axes

Gravitation and satellites: Kepler's law of planetary motion, Newton's law of gravitation , Escape velocity (derivation), Satellites, Geo-stationary satellite.

UNIT-V

Temperature and its measurement: Principles of measurement of temperature and different scales of temperature, Difference between heat and temperature on the basis of K.E. of molecules, Bimetallic and Platinum resistance thermometer: their merits and demerits, Pyrometers – Disappearing filament optical pyrometer

Transfer of Heat: Modes of transfer of heat (conduction, convection and radiation with examples) Coefficient of thermal conductivity, determination of thermal conductivity of good conductor (Searle's method) and bad conductor (Lee's disc method) , Properties of heat radiation, Stefan's law, Kirchhoff's law, Wien's law, Planck's black body radiation law, Prevost's theory of heat exchange

LIST OF PRACTICALS

1. To find the thickness of wire using a screw gauge
2. To find volume of solid cylinder and hollow cylinder using a vernier caliper
3. To determine the thickness of glass strip and radius of curvature of a concave surface using a spherometer
4. To find the surface tension of a liquid by capillary rise method
5. To determine and verify the time period of cantilever by drawing graph between load (w) and depression (D)
6. To determine the atmospheric pressure at a place using Fortin's Barometer
7. To determine the coefficient of linear expansion of a metal rod
8. To find the coefficient of thermal conductivity of copper using Searle's conductivity apparatus

To find the coefficient of thermal conductivity of bakelite sheet (bad conductor) by Lee's Disc Method

RECOMMENDED BOOKS

1. Applied Physics Vol. I, TTTI Publication Tata McGraw Hill, Delhi
2. Basic Applied Physics by RK Gaur; Dhanpat Rai Publications
3. Comprehensive Practical Physics - Volume I and II by JN Jaiswal; Laxmi Publishers
4. Numerical Problems in Physics - Volume I and II by RS Bharaj; Tata McGraw Hill
5. Simple Course in Electricity and Magnetism by CL Arora; S Chand and Co, New Delhi
6. Fundamental Physics - Volume I and II by Gomber and Gogia; Pardeep Publications, Jalandhar
7. A Text Book of Optics by Subramanian and Brij Lal
8. Physics Laboratory Manual by PK Palanisamy, Scitech Publications
9. Fundamentals of Physics by Resnick and Halliday, Asian Books Pvt. Ltd., New Delhi
10. Concepts in Physics by HC Verma; Bharti Bhawan Ltd., New Delhi
11. Applied Physics Vol. I&II H.C. Saxena & Prabhakar Singh
12. Applied Physics Vol. I&II D.Halliday & R.Rasnick
13. Engineering Physics – BVN Rao
14. Principles of Physics – K.K. Mohindroo
15. Basic Principles of Physics – Brij Lal Subramanyam .

APPLIED CHEMISTRY-I

UNIT-I
Language of Chemistry: Definition of symbol, formula, valency and chemical equation. Writing of the chemical formula of a simple chemical compound. Calculation of percentage composition of a chemical compound, Essentials of a chemical equation, balancing of a chemical equation by Hit and Trial method.

UNIT-II
Chemical Bonding: Electronic concept of valency, Elementary account of electrovalent, covalent and coordinate bond formation on the basis of the electronic concept of valency with the help of suitable examples to each

UNIT-III
Water: 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. Methods to remove hardness of water (i) Clark's Process (ii) Permutit Process (iii) Soda Lime process (iv) Ion-Exchange process. Simple numerical problems related to soda lime process. Definition of degree of hardness of water and the systems to express the degree of hardness of water. Simple numerical problems related to finding the degree of hardness on different scales. Qualities of water used for drinking purposes, treatment of river water to make it fit for town supply

UNIT-IV
Solutions: Concept of homogenous solution, brief introduction of the terms (i) Ionization (ii) Acidity (iii) Basicity (iv) equivalent weight and gram equivalent weight with suitable examples Strength of a solution (i) Normality (ii) Molarity (iii) Molarity as applied in relation to a solution. Simple numerical problems related to volumetric analysis, Definition of pH, and different industrial applications of pH

UNIT-V
Electrolysis: Definition of the terms: Electrolytes, Non-electrolytes conductors and non-conductors with suitable examples. Faraday's Laws of Electrolysis. Simple numerical problems based upon the laws of electrolysis, Different industrial applications of 'Electrolysis'. Elementary account of (i) lead acid battery and (ii) Ni-Cd battery with special reference to their reaction mechanisms.

LIST OF PRACTICALS

1. Volumetric analysis and study of apparatus used therein. Simple problems on volumetric analysis equation
2. Preparation of standard solution of oxalic acid or potassium dichromate
3. Determine the strength of a given solution of sodium hydroxide with the help of a standard solution of oxalic acid
4. Determine the strength of solution of HCl with the help of a solution of NaOH and an intermediate solution of standard oxalic acid
5. Find the amount of chlorides in mg per liter in a sample of H_2O with the help of a solution of $AgNO_3$
6. Determine the degree of temporary hardness of water by O' Hehner's method
7. Estimate the amount of Cu in a sample of $CuSO_4$ using a standard solution of $Na_2S_2O_3$
8. Estimation of amount of iron in hematite ore volumetrically
9. Estimation of total alkalinity of water volumetrically
10. Determine conductance, pH of water sample using conductance bridge and pH meter

RECOMMENDED BOOKS

1.   Chemistry in Engineering by J.C. Kuriacose and J. Rajaram; Tata McGraw-Hill Publishing Company Limited, New Delhi
2.   Engineering Chemistry by Dr. S. Rabindra and Prof. B.K. Mishra ; Kumar and Kumar Publishers (P) Ltd. Bangalore-40
3.   "A Text Book of Applied Chemistry-I" by SS Kumar; Tata McGraw Hill, Delhi
4.   "A Text Book of Applied Chemistry-I" by Sharma and Others; Technical Bureau of India, Jalandhar
5.   Engineering Chemistry by Jain PC and Jain M
6.   Chemistry of Engineering by Aggarwal CV
7.   Chemistry for Environmental Engineers by Swayer and McCarty, McGraw Hill, Delhi
8.   Progressive Applied Chemistry –I and II by Dr. G.H. Hugar; Eagle Prakashan, Jalandhar
9.   Engineering Chemistry by O. P. Agrawal.
10.   Physical Chemistry by Glosstone.
11.   Organic Chemistry by Sarkar and Rakshit.
12.   Engineering Chemistry by M. M. Uppal Revised by S. C. Bhatia.
13.   Modern Text Book of Applied Chemistry by P.C. Jain, Dr. G. C. Saxena and Dr.A. K. Goswami.

ENGINEERING DRAWING-I

UNIT-I
1. Introduction
- Introduction to drawing equipments, instruments and their uses
- Planning of drawing sheet as per I.S. 696 – 1972
- Indian standard practices of laying out and folding of drawing
- Different types of lines used in engineering drawing
- Standard practice for writing single stroke vertical and inclined capital and lower cases letters (practice to be done on sketch book)
- Standard practice of writing numerals (practice to be done on sketch book)

2. Dimensioning techniques and standard conventions
- Identification and representation of various symbols used in Mechanical and Electrical Drawing
- Drawing Identification and representation of various symbols of building elements, materials and sanitary fittings
- Principles, system and arrangement of dimensioning
- Practice problems of current method of dimensioning
-

UNIT-II
1. Form associated with engineering curves
- Types of engineering curves
- Method of construction of Engineering Curves
- Practice problems of drawing various Engineering Curves.
- Importance of scale in Engineering drawing
- Types of scales- plain, diagonal etc.
- Practical problems for constructing various types of scale.

2. Orthographic projection of points, lines and planes
- Definitions of various terms associated with orthographic projections.
- Planes of projections
- Concept of Quadrants
- First and third angle method of projection
- Projection of line in different positions with respects to H.P. V.P. and X-Y line
- Projection of planes in different position with respect to reference planes
- Practice problems on projection of points, lines and planes.

UNIT-III
1. Projections of simple machine parts and components
- Procedure for drawing projections and sectional views of simple machine components
- Practice problems of sketching and drawing the projections and sections of simple machine components.

2. Projections of solids
- Types of solids and associated terminology
- Position of solid with respect to reference planes
- Drawing projections of solid in different position with respect to reference planes
- Practice problems to draw projections of solid in different positions.

UNIT-IV

1. Section of solids
- Concept of sectioning planes
- Auxiliary planes and true shape of section
- Practice problems for drawing projections and section of solids.

2. **Development of surfaces**
- Concept and importance of surface development in engineering field
- Development of surfaces for the following
- Cube
- Cylinder
- Prism
- Cone and Frustum cone
- Practice problems.

UNIT-V

1. Isometric projections 8
- Limitations of orthographic projections
- Definitions of the terms axonometric, oblique, Isometric and diametric projections
- Procedure for preparing isometric oblique
- Isometric view of geometrical solids and simple machine parts
- Practice problems.

2. Basics of CAD
- Computer hardware and software requirement for CAD
- Co-ordinate systems
- Set up for a CAD drawing
- Drawing objects like- Line, Circle, Arc, Ellipse, Regular Polygons, Polylines, Donuts etc.
- Editing Commands like- Move, Copy, Rotate, Scale, Fillet, Chamfer, Trim, Extend, Array, Mirror etc.
- Basic dimensioning, geometric dimensioning and tolerance
- Use CAD commands for simple orthographic and isometric drawings

Instructional Strategies
- Lecture Method
- Demonstration and use of instrument used in drawing.
- Classroom practices for different typical exercises.
- Use of computer for developing drawing
- OHP Transparencies for complicated drawing objects

List of Practicals
- Problems on Scales and Letterings (One sheet)

- Problems on Curves (One sheet)
- Simple Orthographic Projections- One for First Angle and One for Third Angle Projection (Two sheets)
- Orthographic projections with sections (One sheet)
- Isometric projection for two objects (One sheet)
- Projection of Points and Lines (One sheet)
- Projection of Planes (One sheet)
- Projection of Solids (Two sheets)
- Section of Solids (Two sheets)
- Development of surface (Two sheets)
- Use CAD for orthographic projection (Five problems)
- Use CAD for isometric projection (Three problems)

Reference Books
1. I.S. 696. (Latest revision), BIS, India
2. Engineering Drawing, N.D. Bhatt, Charoter Publisher,Anand
3. Engineering Drawing & Machine Drawing, R. K. Dhawan, Kumar
4. Engineering Drawing , R.B. Gupta, Satya Prakashan, Delhi
5. Geometrical Drawing , P.S. Gill , ketson & Sons

Computer Fundamentals and Applications

UNIT-I

1. INTRODUCTION TO COMPUTERS

Generations Of Computer-

-First, Second, Third and Fourth generation.

Classification & applications of computers-

- Micro, Mini, Mainframes and Super-Computers.

- Applications of computers.

2. MICROCOMPUTER

Structure & Working Of Micro Computers

- Central Processing Unit.

- Memory Unit.

- Input & Output Devices.

Evolution Of Micro-Computers

- Comparative study w.r.t. Micro-processor, clock speed, data bus, Register size, storage capacity, peripheral interface of PC to Pentium-IV computer systems.

UNIT-II

1. DATA REPRESENTATION

Data Representation

-Bit, byte, Nibble, Word, Double word Codes: ASCII, Binary Coded Decimal (BCD) EBCDIC, GREY and EXCESS 3 code

.**Number Systems**

-Types of number systems-Binary, Octal, Decimal, Hexadecimal.

Conversions Of Number Systems And Its Operations

-Binary addition, subtraction

.-BCD addition, subtraction.

-1's complement and 2's complement methods of subtraction Floating point arithmetic.

UNIT-III

1. COMPUTER LANGUAGES

Classification And Characteristics Of Languages

-Machine language.

-Assembly language.

-High level language.

-Hardware, Software And Firmware Computer Hardware Classification Of Software

2. INTRODUCTION TO DOS OPERATING SYSTEMS

- **Micro-Soft Disk Operating System (Ms-Dos)**

  -System files: BIOS, COMMAND.COM, CONFIG.SYS, Autoexec.bat file.

- **MS-DOS Commands**

  -Internal Commands – dir, cd, md, rd, del, ren, date, time, vol.

  And copy External commands– attrib, format, edit, find, diskcopy, backup & restore.

UNIT-IV

1. INTRODUCTION TO WINDOWS OPERATING SYSTEMS

Windows Operating System

-Concept of Windows-Arranging, Moving, Resizing, Opening, and Closing of windows
.-Folder/File Management-Search, copy, delete and rename files and folders Windows Accessories:
Notepad, Word Pad, Pad.

2. COMPUTER APPLICATIONS SOFTWARE.

- **Word Processing Software**
  MS Word
- **Data Analysis Software**
  MS Excel Introduction to Electronic Spreadsheet.
- **Presentation Software**
  MS Power Point

UNIT-V
1. INTERNET APPLICATIONS

Introduction To Internet -Different Services Of Internet
-www
-Email
-Chat (textual/voice)
-Bulletin Boards
-Video conferencing
-FTP (uploading and downloading files)
WEB-SITE ACCESS AND INFORMATION SEARCH
-Browsers and search engines.

2. INTERNET CONNECTIVITY

Internet Connectivity
-Internet Service Provider (ISP)
-Internet accounts : Shell account, TCP/IP ISDN and Leased Line
-Account and its features.
Hardware Required
-MODEM and Terminal Adapters.
-System software: O.S. Loader, Linker, Interpreter, Compiler and Assembler Application Software.

List of Experiments/Demonstrations/Tutorials
- Study Of Input And Output Devices
- Study Of Storage Devices
- Practice On Internal And External Ms-Dos Commands
- Practice On Windows 95/98/2000

Starting Windows, Exploring the desktop, Arranging windows, My Computer, The start button, Creating Shortcuts, Practice on moving and sizing of windows.
Study of file organization: creating, copying, moving, renaming and deleting. -Practice on Windows Accessories – Notepad, Word Pad and Paint. Editing document & formatting text, Previewing and printing document/Image file. -Practice on Windows Explorer.
 Recycle bin, Shutting down windows.

PRACTICE ON MS-WORD

Create and format document ,
Edit and Modify text-changing font size type and style.
Auto Text, AutoComplete, AutoCorrect, grammar and spellchecker, Find and replace of text.

Open save and print a document.

Insert, modify table.
PRACTICE ON MICROSOFT EXCEL

Create, save & format worksheet
 Open and save worksheet file.
 Edit & modify data.

Use formula and functions.
Split windows and freeze pans.
Create, edit, modify, print worksheet/charts.

PRACTICE ON POWERPOINT

Create, edit, insert, move, slides.
Open and save presentation.

Insert picture, slide layout, action button.
 Present slide show.

PRACTICE ON INTERNET

Identification of type of Account.   Connecting to internet.
Dial up access
Web browsing
Searching websites
Email services
Creating email accounts & Receiving and sending mails

Reference Books
1. Introduction to Computers, Iind Edition 1998 , Peter Norton's Tata McGraw Hills Publishing
2. The ABCs of Ms-Office 97 , Ist Edition, Gay Hart Davis
3. Computer Organization and architecture, IVth – Edition 1996 , William Stalling
4. Structured computer Organization , III rd – Edition 1997 , Andrews Tanenbaum Prentice Hall of India Pvt. Ltd, N. Delhi
5. Teach yourself…… windows 95, I st – Edition 1995 , A L Stevens Comer BPB Publication, N. Delhi
6. The Internet Book , II – Edition 200, Douglas E. Prentice Hall of India Pvt. Ltd, N. Delhi

DICS107

WORKSHOP PRACTICE -I

1 Measurement, Identification and use of the various measuring tools & instruments.

- Linear measurements and measuring devices.
- Angular measurements and measuring devices
- Other measuring tools such as surface plate, Surface gauge, plate Safety in different shop of workshops.

2. Wood working (carpentry shop)
- 2.1 Identification of carpentry tools and their uses.
- 2.2 Perform various wood working operations.

3. Fitting shop.
3. 1 Identification ofvarious tools used and the operations performed in fitting shop.

3.1.1 Perform various fitting operations.

3.1.2 Marking of job as per dimensior.

3.1.3 Sawing.

3.1.4 Chipping .

3.1.5 Filling .

3.1.6 Taping .

3.1.7 Reaming.

3.1.8 Drilling.

3.2 Smithy Ship

3.2.1 identification of various tools and equipments used & their use.

3.2.2 Perform Various smithy operations.

3.2.3 Up setting .

3.2.4 Drawing down.

3.2.5 Bending

3.2.6 Setting down.

3.2.7 Welding.

3.2.8 Cutting .

3.2.9 Punching.

3.2.10 Fullering.

4.Sheet metal.
4.3.1 Identification and use of the various tools.

4.3.2 Perform various sheet-metal operations.

4.3.3 Shearing

4.3.4 Bending

4.3.5 Drawing

4.3.6 Squeezing.

4.3.7 Marking on sheet

4.3.8 Snipping.

4.3.9 Grooving

5 Welding Shop
5.1 Identification and use of the various tools and equipments.

5.2 Perform the arc welding and gas welding operations.

5.3 Perform the soldering and Brazing operations.

6 Machine shop
6.1 Identification and use of the various tools and equipments.

6.2 Classification of lathe and operation of lathe.

6.3 Plane turning

6.4 Taper turning

6.5 Treading

6.6 Drilling

6.7 Various attachment used in lathe.

Reference Books

(1) Workshop Technology (Vol-1) Hazra & choudhary .

(2) Workshop Technology – (Vol-1 & 2) Chapnan (3) Manufacturing process (Vol-1) Delela (4) Materials and Manufacturing Lindberg processes.

SEMESTER-II

DICS201

Communication Skills – II

Course Objective-
Language is the most commonly used and effective medium of self-expression in all spheres of human life – personal, social and professional. A student must have a fair knowledge of English language and be able to pursue the present course of study and handle the future jobs in industry. The objective of this course is to assist the diploma holders to acquire proficiency, both in spoken (oral) and written language. At the end of the course, the student will be able to develop comprehension, improve vocabulary, develop grammatical ability, enhance writing skills, correspond with others, enhance skills in spoken English.

DETAILED CONTENTS

Unit-I
Prose Text Book
The following six chapters of A Book of English published by Mc million India

Uncle Podger Hangs a Picture
Subash Chandra Bose
A Pair of Mustachios
Guru Gobind Singh
With The Photographer
Sir Jagdish Chandra Bose

There will be one general question from one of these six chapters.
Precise writing (selected from the prescribed 6 chapters of Prose Text Book)

Unit-II Grammar
- Antonyms change of words into different parts of speech
- Correspondence

Business letters such as:
Registration as supplier
Floating quotations and tenders
Quarry for product specification, price and other details etc from afirm/Company
Covering letter for quoting prices against a quotation/tender
Placing supply order
- Note-Making
- Interview Skills

Unit-III
Official letters such as:
- Letter to editor for placing an advertisement in the newspaper for purchase/selling of goods
- Letter to General Manager, Telephone Department for restoring a dead telephone/shifting a telephone Letter to Municipal Commissioner for improving water supply/ sanitation system in your locality
- Letter to State Electricity Board for repair of street lighting/ correction of bills etc.
- Letter to the supplier for rectifying or replacing a defective machinery/item of purchase
- Letter to Registrar, State Board of Technical Education for allowing to improve grades/marks in diploma examination

Unit-IV
- Report Writing
- Drafting a technical report of a visit to a factory, construction site, modern office, etc.
- Report writing on current general themes/topics related to economy, industry, social issues
- Elements of periodical progress report
- Inspection Note
- Write an inspection note after inspecting technical/industrial goods
- Write an inspection note after visiting a construction site or production shop
- Writing "Preface" and "acknowledgement" of a project report A paragraph on current topics/themes

Technology
Science
Economy
Politics
Social
General

- Drafting
- Press notes
- Memos/circulars
- Notices (lost and found: obituary/auction, etc)
- Telegrams
- Press releases
- Agenda and minutes of the meeting
- Personal resume/curriculum vitae

Unit-V
Communication Techniques
- Importance of communication
- Types of communication – verbal and non-verbal
- One way and two-way communication
- Process of communication – horizontal, vertical, upward, downward
- Essentials of good communication
- Level of communication – inter and intra personal, group to person, group to group
- Methods of effective oral, written and non-verbal communication, Horizons – tone, frequency, rate, volume, depth
- Barrier to communication and overcoming barriers
- Listening skill
- Use of audio visual aids for effective communication

Reference Books

Essentials of Business Communication by Pal and Rorualling; Sultan Chand and Sons
The Essence of Effective Communication, Ludlow and Panthon; Prentice Hall of India
New Design English Grammar, Reading and Writing Skills by AL Kohli (Course A and course B), Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,
New Design English Reading and Advanced Writing Skills for Class XI and XII by MK Kohli and AL Kohli; Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,
A Practical English Grammar by Thomson and Marlinet
Spoken English by V Sasikumar and PV Dhamija; Tata McGraw Hill
English Conversation Practice by Grount Taylor; Tata McGraw Hill
Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi
Business Correspondence and Report Writing by RC Sharma and Krishna Mohan; Tata McGraw Hill Publishing Company Ltd. New Delhi
Communication Skills by Ms. R Datta Roy and KK Dhir, Vishal Publication, Jalandhar

Course Outcome –

1. Students will be better equipped in the skills essential for effective communication.
2. This course will instruct students about the in-depth knowledge of career oriented communication.

DICS202

Applied Mathematics – II

RATIONALE
Applied Mathematics forms the backbone of engineering discipline. Basic elements of differential calculus, integral calculus, differential equations and coordinate geometry have been included in the curriculum as foundation course and to provide base for continuing education to the students

Unit-I
Function and limit
Function –definition of variable constant interval such as open closed semi open etc Definition of function value of a function and types of functions
Limit –definition of limit limits of algebraic trigonometric exponential and logarithmic function

Unit-II
Differentiation
Definition of differentiation
Differentiation by first principle of xn, (ax + b)n, Sin x, cos x, tan x, sec x,, cosec xand cot x, ex, ax, log x. Differentiation of a function of a function and explicit and implicit functions
Differentiation of sum, product and quotient of different functions

Unit-III
Integral Calculus
 Integration as inverse operation of differentiation
 Simple integration by substitution, by parts and by partial fractions
 Evaluation of definite integrals (simple problems) by explaining the general properties of definite integrals

Unit-IV
Statistics
measures of control tendency. Mean, median, Mode
Measure of Dispersion mean, Standard deviation
Mean deviation variance and coefficient of variation comparison of
Two sets

Unit-V
Differential Equation
Definition of differential equation
Order of differential equation
Explanation of order and degree
Solution of differential equation of first order and first degree

Reference Books

1. Higher Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
2. Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
3. Engineering Mathematics vol. II by S Kohli and Others, IPH, Jalandhar
4. Engineering Mathematics by Ishan Publication
5. Applied Mathematics Vol. II by SS Sabharwal and Others; Eagle Parkashan, Jalandhar
6. Engineering Mathematics by IB Prasad
7. Applied Mathematics Vol. II by Dr RD Sharma
8. Advanced Engineering Mathematics by AB Mathur and VP Jagi; Khanna Publishers, Delhi
11. Engineering Mathematics by C Dass Chawla; Asian Publishers, New Delhi

DICS203

Applied Physics – II

RATIONALE

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

DETAILED CONTENTS

Unit-I
Applications of sound waves
- Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time
- Ultrasonics – production (magnetostriction and peizo-electric) and their engineering applications

Unit-II
Principle of optics
- Introduction: reflection of light, image formation in mirrors (convex and concave), refraction and refractive index, image formation in lenses, lens formulae (thin lens only), power of lens, total internal reflection
- Defects in image formation by lenses and their correction
- Simple and compound microscope, astronomical and Galileo telescope, magnifying power and its calculation (in each case)
- Overhead projector and slide projector

Unit-III
Electrostatics
- Coulombs law, unit charge
- Gauss"s Law
- Electric field intensity and electric potential
- Electric field of point charge, charged sphere (conducting and non-conducting), straight charged conductor, plane charged sheet
- Capacitance, types of capacitors, capacitance of parallel plate capacitor, series and parallel combination of capacitors
- Dielectric and its effect on capacitors, dielectric constant and dielectric break down

Unit-IV
Electricity
- Ohm"s law
- Resistance of a conductor, specific resistance, series and parallel combination of resistors, effect of temperature on resistance
- Kirchhoff"s laws, wheatstone bridge principle and its applications
- Heating effect of current and concept of electric power

Semi conductor physics

- Energy bands, intrinsic and extrinsic semi conductors, p-n junction diode and its characteristics
- Diode as rectifier – half wave and full wave rectifier, semi conductor transistor pnp and npn (concept only)

Unit-V
Modern Physics

- Lasers: concept of energy levels, ionization and excitation potentials;spontaneous and stimulated emission; lasers and its characteristics, populationinversion, types of lasers, helium – neon and ruby lasers and applications
- Fibre optics: Introduction, optical fiber materials, types, light propagation andapplications
- Super conductivity: Phenomenon of super conductivity, effect of magnetic field,critical field, type I and type II super conductors and their applications)
- Energy sources – conventional and non-conventional (wind, water, solar, bio,nuclear energy), only elementary idea

List of Practicals
1. To verify Ohm‟s law
2. To verify law of resistances in series and in parallel
3. To determine the magnifying power of a compound microscope
4. To determine the magnifying power of an astronomical telescope
51
5. To convert a galvanometer into an ammeter of a given range
6. To convert a galvanometer into a voltmeter of a given range
7. To find the wavelength of a He-Ne laser
8. To find the frequency of a tuning fork by a sonometer
9. To study characteristics of a pn junction diode

Reference Books
1. Applied Physics Vol. II, TTTI Publication Tata McGraw Hill, Delhi
2. Basic Applied Physics by RK Gaur; Dhanpat Rai Publications
3. Comprehensive Practical Physics - Volume I and II by JN Jaiswal; Laxmi Publishers
4. Numerical Problems in Physics - Volume I and II by RS Bharaj; Tata McGraw Hill
5. Simple Course in Electricity and Magnetism by CL Arora; S Chand and Co, New Delhi
6. Fundamental Physics - Volume I and II by Gomber and Gogia; Pardeep Publications, Jalandhar
7. A Text Book of Optics by Subramanian and Brij Lal
8. Physics Laboratory Manual by PK Palanisamy, Scitech Publications
9. Fundamentals of Physics by Resnick and Halliday, Asian Books Pvt. Ltd., New Delhi
10. Concepts in Physics by HC Verma; Bharti Bhawan Ltd., New Delhi

DICS204

Applied Chemistry-II

RATIONALE

The role of Chemistry and chemical products in every branch of engineering is expanding greatly. Now a days 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 behaviour 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 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.

DETAILED CONTENTS

Unit-I
Metallurgy
- A brief introduction of the terms: Metallurgy (types), mineral, ore, gangue or matrix, flux, slag, concentration (methods of concentrating the ores), roasting calcination and refining as applied in relation to various metallurgical operations
- Metallurgy of (i) Aluminium (ii) Iron with their physical and chemical properties
- Definition of an alloy, purposes of alloying, composition, properties and uses of alloys brass, bronze, monel metal, magnalium, duralumin, alnico and invar

Unit-II
Fuels
- Definition of a „Fuel", characteristics of a good fuel and classification of fuels with suitable examples
- Definition of Calorific value of a fuel and determination of calorific value of a liquid fuel with the help of Bomb calorimeter. Simple numerical problems based upon Bomb calorimeter method of finding the Calorific values
- Brief description of „Proximate" and „Ultimate" analysis of a fuel. Importance of conducting the proximate and ultimate analysis of a fuel
- Qualities of a good fuel and merits of gaseous fuels over those of other varieties of fuels
- Manufacture, composition, properties and uses of (i) Water gas (ii) Oil gas (iii) Biogas

Unit-III
Corrosion
- Meaning of the term „corrosion" and its definition
- Theories of corrosion i.e. (i) direct chemical action theory and (ii) electro chemical theory
- Prevention of corrosion by
  1. (a) Alloying
     (b) Providing metallic coatings
  2. **Cathodic protections:**
     (a) Sacrificial
     (b) Impressed voltage method

Unit-IV
Lubricants
- Definition of (i) lubricant (ii) lubrication
- Classification of lubricants
- Principles of lubrication
  (i) fluid film lubrication
  (ii) boundary lubrication
  (iii) extreme pressure lubrication
- Characteristics of a lubricant such as viscosity, viscosity index, volatility oiliness, acidity, emulsification, flash point and fire point and pour point.

Unit-V
Cement and Glass
- Manufacture of Portland Cement
- Manufacture of ordinary glass and lead glass

Classification and Nomenclature of Organic Compounds
Classification of Organic Compounds, functional group, Homologous Series, Nomenclature, Physical and Chemical properties, and industrial use of Organic Compounds, IUPAC system of nomenclature of Carboxylic acid, Alcohols, Phenols,Aldehydes, Ketones and Amines.

List of Practicals
1. Gravimetric analysis and study of apparatus used there in
2. To determine the percentage composition of a mixture consisting of a volatile and a nonvolatile Substances
3. Determine the viscosity of a given oil with the help of "Redwood viscometer"
4. Determine the flash point of the given oil with the help of Abel"s Flash Point Apparatus
5. Estimate the amount of moisture in the given sample of coal
6. Estimate the amount of ash in the given sample of coal
7. Electroplate the given strip of Cu with Ni
8. Confirmation test of alcohol, aldehydes, carboxylic acid, amine
9. Determination of copper in the given brass solution, or sample of blue vitriol volumetrically
10. Detection of metal iorn in the rust (solution of rust in concentrated HCL may be given).

Reference Books
1. Chemistry in Engineering by J.C. Kuriacose and J. Rajaram; Tata McGraw-Hill Publishing Company Limited, New Delhi
2. Engineering Chemistry by Dr. S. Rabindra and Prof. B.K. Mishra ; Kumar and Kumar Publishers (P) Ltd. Bangalore-40
3. "A Text Book of Applied Chemistry-I" by SS Kumar; Tata McGraw Hill, Delhi
4. "A Text Book of Applied Chemistry-I" by Sharma and Others; Technical Bureau of India, Jalandhar
5. Engineering Chemistry by Jain PC and Jain M
6. Chemistry of Engineering by Aggarwal CV
7. Chemistry for Environmental Engineers by Swayer and McCarty, McGraw Hill, Delhi
8. Progressive Applied Chemistry –I and II by Dr. G.H. Hugar; Eagle Prakashan, Jalandhar

DICS205

Basic Electrical Engineering

Unit I
Application and Advantages of Electricity:
- Difference between AC and DC
- Various applications of electricity
- Advantages of electrical energy over other types of energy

Basic Quantities of Electricity
- Definition of voltage, current, power and energy with their units
- Name of the instruments used for measurement of quantities given in 5.1
- Connection of the instruments in 5.2 in electric circuit

Unit II
Various Types of Power Plants:
- Elementary block diagram of thermal, hydro and nuclear power stations
- Brief explanation of the principle of power generation in above power stations

Elements of Transmission Line:
- Pictorial diagram of a three-phase transmission and distribution system showing transformers, supports, conductors, insulators and earth wire etc.
- Brief function of accessories of transmission lines
- Earthing of lines, substation and power station - need and practices adopted

UNIT III
Distribution System:
- Distinction between high and low voltage distribution system
- Identification of three phase wires, neutral wires and the earth wire on a low voltage distribution system
- Identification of the voltage between phases and between one phase and neutral
- Distinction between three phase and single phase supply

Supply from the Poles to the Distribution Board:
- Arrangement of supply system from pole to the distribution board
- Function of service line, energy meter, main switch, distribution board

UNIT IV
Domestic Installation:
- Distinction between light and fan circuits and single phase power circuit, sub circuits
- Various accessories and parts of installation, identification of wiring systems
- Common safety measures and earthing
- Introduction to BIS code of safety and wiring installation

Unit V

Electric Motors and Pumps:

- Definition and various application of single phase and three phase motors
- Connection and starting of three phase motors by star delta starter
- Conversion of horse power in watts or kilowatts
- Type of pumps and their applications

List of Practical's

1. Use of Megger:
Objective: To make the students familiar with different uses of megger
2. Connection of a three phase motor and starter including fuses and reversing of direction of rotation.
Objective: Students may be made familiar with the equipment needed to control a three-phase motor . The students must experience that by changing any two phases, the direction of rotation is reversed.
3. Connection of a lamp, ceiling fan, socket outlet, geyser, floor grinder, voltage stabilizer etc.
Objective: Students may be made familiar with the different types of equipment and circuits used in the domestic installations
4. Trouble shooting in a three-phase motor
Note: The teacher may create anyone of the following faults
(a)   Loose connections
(b)   Blown fuse
(c)   Tripped overload protection
(d)   Incorrect direction of rotation
(e)   Single phasing
(f)   Burnt winding to be simulated by a loose connection behind a terminal box.
Objective: The students must be able to detect the most common faults, which may occur in a   three-phase motor, using meggar wherever necessary
5. Trouble shooting in a domestic wiring system.
    Note: The teacher may introduce a fault in the existing wiring system of a classroom or workshop like
(a)   blown fuse
(b)   loose connection
(c)   faulty components/accessories etc.
Objective: Students must be able to detect common faults which may occur in a domestic wiring system
6. Treatment of electric shock
Note: The teacher may give a demonstration how an electric shock must be treated.
Objective: Students must be trained to treat the persons suffering from an electric shock
7. Study of a distribution Board
Note: Students may be asked to study the distribution board in the institution and note down all accessories.
Objective: Students must be made familiar with the distribution board
8. Connections and reading down an energy meter
Objective: Students may be asked to connect an energy meter to a load and calibrate reading
9. Demonstration in electrical machine laboratory
Objective: Students may be shown different types of electrical machines and their starters and should be told that the three phase induction motors are most commonly used.
10. Study of submersible motor pump set:
Objective: To tell use of the set in water supply and irrigation works.

Reference Books:

1. Electrical Technology, Fifth Editon by Edward Hughes, Longman Publishers
2. Electrical Technology by BL Theraja, S Chand and Co, New Delhi
3. Basic Electrical and Electronics Engineering by SK Sahdev; Dhanpat Rai and Sons, New Delhi
4. Experiments in Basic Electrical Engineering by SK Bhatacharya, KM Rastogi; New Age International (P) Ltd.; Publishers New Delhi
5. Principles of Electrical Engineering by BR Gupta, S Chand and Co, New Delhi
6. Electrical Engineering by DR Arora; Ishan Publications, Ambala
7. Basic Electrical Engineering by PS Dhogal, Tata Mc Graw Hill, New Delhi61
8. Basic Electrical Engineering by JB Gupta; SK Kataria and Sons, New Delhi
9. Experiments in Basic Electrical Engineering by GP Chalhotra, Khana Publishers, New Delhi
10. Basic Electrical Engineering by T.S. Anand, North Publications, Jalandhar.

DICS206

Programming In 'C'

RATIONALE

Computers play a vital role in present day life, more so, in the professional life of technician engineers. People working in field/ computer industry use computers in solving problems more easily and effectively. In order to enable the students use the computers effectively in problem solving, this course offers the modern programming language C along with exposition to various applications of computers. The knowledge of C language will be reinforced by the practical exercises.

DETAILED CONTENTS

Unit-I
Algorithm and Programming Development
- Steps in development of a program
- Flow charts, Algorithm development
- Program Debugging

Program Structure
- I/o statements, assign statements
- Constants, variables and data types
- Operators and Expressions
- Standards and Formatted

Unit-II
Control Structures
- Introduction
- Decision making with IF – statement
- IF – Else and Nested IF
- While and do-while, for loop
- Break and switch statements

Unit-III
Functions
- Introduction to functions
- Global and Local Variables
- Function Declaration
- Standard functions
- Parameters and Parameter Passing
- Call – by value/reference

Unit-IV
Arrays
- Introduction to Arrays
- Array Declaration
- Single and Multidimensional Array
- Arrays of characters

Pointers
- Introduction to Pointers
- Address operator and pointers
- Declaring and Initializing pointers
- Assignment through pointers
- Pointers and Arrays

Unit-V
Structures and Unions
- Declaration of structures
- Accessing structure members
- Structure Initialization
- Arrays of structure
- Unions

- **List of Practicals**
- 1. Programming exercises on executing and editing a C program.
- 2. Programming exercises on defining variables and assigning values to variables.
- 3. Programming exercises on arithmetic and relational operators.
- 4. Programming exercises on arithmetic expressions and their evaluation
- 5. Programming exercises on formatting input/output using printf and scarf.
- 6. Programming exercises using if statement.
- 7. Programming exercises using if – Else.
- 8. Programming exercises on switch statement.
- 9. Programming exercises on do – while statements.
- 10. Programming exercises on for – statement.
- 11. Programs on one-dimensional array.
- 12. Programs on two-dimensional array.
- 13. (i) Programs for putting two strings together.
-    (ii) Programs for comparing two strings.
- 14. Simple programs using structures.
- 15. Simple programs using pointers.

Reference Books
1. Programming in C by Schaum Series, McGraw Hills Publishers.
2. Thinking in C by P.B. Mahapatra – Wheeler Publication
3. Exploring C by Yashwant Kanetkar – BPB Publications
4. Programming in C by Stefin G. Coachin

5. Programming in C by R Subburaj, Vikas Publishing House Pvt. Ltd., Jangpura, New Delhi
6. Programming with C Language by C Balaguruswami, Tata McGraw Hill, New Delhi
7. Elements of C by M.H. Lewin,
8. Programming in C by Stephen G Kochan, TMH/Prentice Hall of India
9. Programming in C by BP Mahapatra, Khanna Publishers, New Delhi
10. Let Us C by Yashwant Kanetkar, BPB Publication, New Delhi

SEMESTER III

DICS301

Operating Systems

RATIONALE
The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working. The students will also get hand-on experience and good working knowledge to work in DOS and windows environments. The aim is to gain proficiency in using various operating systems after undergoing this course. While imparting instructions, the teachers are expected to lay more emphasis on concepts and principles of operating systems, its features and practical utility.

DETAILED CONTENTS

Unit-I
Brief Introduction to System Software
- Compiler
- Assembler
- Loader
- Operating system

Unit-II
Brief Introduction to MS-DOS and WINDOWS
- Brief history of DOS, and WINDOWS
- Main features of DOS
- Directory structure of DOS
- File structure of DOS
- Detail concept of DOS commands
- Introduction to Windows

Unit-III
Overview of Operating Systems
- Definition of Operating Systems
- Types of Operating Systems
- Importance of Operating Systems
- Softness organization
- Linking, loading and executing control program

Unit-IV
Functions of Operating System
Process Management Functions (Principles and Brief Concept)
- Job Scheduler
- Process Scheduler

- Process synchronization

Memory Management Function (Principles and Brief Concept)
- Introduction
- Single Process System
- Fixed Partition Memory
- System Loading
- Segmentation
- Swapping
- Simple Paging System

Unit:-V
I/O Management Functions (Principles and Brief Concept)
- Dedicated Devices
- Shared Devices
- I/O Devices
- Storage Devices
- Buffering
- Spotting

File Management
- Principles and Brief Concept Types of File System
- Simple file system
- Basic file system
- Logical file system
- Physical file system

List of Practicals
- Demonstration of all the controls provided on Control Panel
- Practical exercises involving various internal and external DOS commands (20 No.)
- Practical exercises involving Basics of Windows (20 No.)
- Exercises on windows operating system

Reference Books
1. Operating System Concepts by EktaWalia , Khanna Publishers, New Delhi.
2. Operating Systems by John J Donovan
3. System Programming by DhamDhare
4. Operating Systems by C. Ritchie
5. MS DOS by Peter Norton, BPB Publications
6. Microsoft Windows Manual
7. First Course in Computers by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
8. DOS Manual
9. Windows 2000 by BPB Publication, New Delhi.
10. Operating System by Stallings, Tata McGraw Hill, New Delhi.

DICS302

Digital Electronics - I

RATIONALE

The objective of this subject is to enable to students to know the basic concepts of digital electronics and gain familiarity with the available IC chips. The students will learn about number systems, logic gates, various codes, parities, Boolean algebra, mux and demux, filp-flop, counters, shift registers. This will form a broad base for studying digital system design, advanced microprocessors and further studies.

DETAILED CONTENTS

Unit-I
Introduction

- Define digital and analog signals and systems, difference between
- Need of digitization and applications of digital systems

Number Systems

- Decimal, binary, octal, hexadecimal number systems
- Conversion of number from one number system to another including decimal points
- Binary addition, subtraction, multiplication, division 1"s and 2"s complement method of subtraction
- BCD code numbers and their limitations, addition of BCD coded numbers, conversion of BCD to decimal and vice-versa
- Excess-3 code, gray code, binary to gray and gray to binary conversion
- Concept of parity, single and double parity, error detection and correction using parity

Unit-II
Logic Gages

- Logic gates, positive and negative logic, pulse waveform, definition, symbols, truth tables, pulsed operation of NOT, OR, AND, NAND, NOR, EX-OR, EX-NOR gates
- NAND and NOR as universal logic gates

Logic Simplification

- Rules and laws of Boolean algebra, logic expression, Demorgen"s theorems, their proof
- Sum of products form ( ) Product of sum form (maxterms), simplification of
- Boolean expressions with the help of Rules and laws of Boolean algebra
- Karnaughmaping techniques upto 4 variables and their applications for simplification of Boolean expression

Unit-III
Arithmetic Circuits

- Half adder, full adder circuits, operation
- Parallel binary adder, 2-bit and 4-bit binary full adder, block diagram, working

Multiplexer/Demultiplexer

- Base functions, symbols and logic diagrams of 4-inputs and 8-inputs multiplexers, function/utility of 16 and 32 inputs multiplexers

Decoders, Display Devices and Associated Circuits

- Basic Binary decoder, 4-line to 16 line decoder circuit
- BCD to decimal decoder, BCD to 7-segment decoder/driver, LED/LCD display

Unit-IV
Encoders and Comparators

- Encoder, decimal to BCD encoder, decimal to BCD priority encoder, keyboard encoder
- Magnitude comparators, symbols and logic diagrams of 2-bit and 4-bit comparators

Latches and Flip-Flops

- Latch, SR-latch, D-latch, Flip-flop, difference between latch and flip-flop
- S-R, D, flip-flop their operation using waveform and truth tables, race around condition
- JK flip-flop, master slave, using waveform and truth tables

Unit-V
Counters

- Asynchronous counter, 4-bit Asynchronous, counter Asynchronous decode counter
- Asynchronous counter, 4-bit synchronous binary counter, Asynchronous decode counter
- Up/down Asynchronous counters, divide by N counter MODIFICATION-3, 5, 7, 12
- Ring counter, cascaded counter, counter applications

Shift Registers

- Shift registers functions, serial-in-serial out, serial-in-parallel-out, parallel-in-serial-out, parallel-in-parallel out
- Universal shift register, shift register counter and applications of shift registers

List of Practicals

1. Study of logic breadboard with verification of truth table for AND, OR, NOT, NAND, EX-OR, NOR gate
2. Verification of NAND and NOR gate as universal gates
3. Construction of half-adder and full adder circuits using EX-OR and NAND gate and verification of their operation
4. a) Verify the operation of multiplexer using an IC
    a. Verify the operation of de-multiplexer using an IC
5. a) Verify the operation of BCD to decimal decoder using an IC
    a. Verify the operation of BCD to 7 segment decoder using an IC
6. Verify operation of SR, JK, D-flip-flop master slave JK filp-flop using IC
7. Verify operation of SISO, PISO, SIPO, PIPO shift register. (universal shift register)
8. Study of ring counter, Up/down counter
9. Construct and verify the operation of an asynchronous binary and decode counter using JK flip-flop
10. Verification of truth tables and study the operation of tristate buffer IC 74126 or similar IC and construction of 4/8 bit bi-directional bus by using an IC
11. Testing of digital ICs using IC tester

Reference Books
1. Digital Electronics and Applications by Malvino leach, Tata McGraw Hill, New Delhi
2. Digital Logic Designs by Morris Mano, Prentice Hall of India, New Delhi
3. Digital Fundamentals by Thomas Floyds, Universal Book Stall
4. Digital Electronics by RP Jain, Tata McGraw Hill, New Delhi
5. Digital Electronics by KS Jamwal, Dhanpat Rai & Co., New Delhi
6. Digital Electronics by Rajiv Sapra, Ishan Publications, Ambala

DICS303

Data Structures Using 'C'

RATIONALE

Data structures are the techniques of designing the basic algorithms for real-life projects. Understanding of data structures is essential and this facilitates the understanding of the language. The practice and assimilation of data structure techniques is essential for programming. The knowledge of „C‟ language and data structures will be reinforced by practical exercises during the course of study. The course will help students to develop the capability of selecting a particular data structure.

DETAILED CONTENTS

Unit-I
Fundamental Notations
- Problem solving concept, top down and bottom up design, structured programming
- Concept of data types, variables and constants
- Concept of pointer variables and constants
- Arrays
- Concept of Arrays
- Single dimensional array
- Two dimensional arrays
- Operations on arrays with Algorithms (searching, traversing, inserting, deleting)

Unit-II
- Linked Lists
- Introduction to linked list and double linked list
- Representation of linked lists in Memory
- Traversing a linked list
- Searching linked list
- Insertion and deletion into linked list
- Application of linked lists
- Doubly linked lists
- Traversing a doubly linked lists
- Insertion and deletion into doubly linked lists

Unit-III
- Stacks, Queues and Recursion
- Introduction to stacks
- Representation of stacks
- Implementation of stacks
- Uses of stacks
- Introduction to queues
- Implementation of queues (with algorithm)
- Circular Queues

- De-queues

Unit-IV

Trees
- Concept of Trees
- Concept of representation of Binary Tree
- Traversing Binary Trees (Pre order, Post order and In order)
- Searching, inserting and deleting binary search trees

Unit-V

Sorting and Searching
- Introduction
- Search algorithm (Linear and Binary)
- Concept of sorting
- Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge
- Sort, Radix Sort, Heap Sort, Radix Exchange Sort)

List of Practicals

Write programs in C to implement

1) The selection (exchange) sort techniques

2) The bubble sort technique

3) The quick sort technique

4) The merge sort technique

5) The binary search procedures to search an element in a given list

6) The linear search procedures to search an element in a given list

7) The addition of two matrices using functions

8) The multiplication of two matrices using pointers

9) Push and pop operation in stack using pointers

10) Insertion and Deletion of elements in queue using pointers

11) Insertion and Deletion of elements in circular queue using pointers

12) Insertion and Deletion of elements in linked list

13) Insertion and Deletion of elements in doubly linked list

14) Conversion from in-fix to post-fix notation

15) The factorial of a given number using recursion

Reference Books
1. Expert data structures with C by R.B. Patel – Khanna Publishers, New Delhi.
2. Data structures – Schaum"s Outline Series – McGraw Hill
3. Data structures – O.G. Kakde and U.A. Deshpande
4. Data Structures by Kruse

5. Data Structures by SanjivSofat, Khanna Publishers, New Delhi
6. Data Structures by Horwitz and SartajSahni
7. Data Structures by Tanenbaum, Prentice Hall of India, New Delhi

Microprocessors – I

RATIONALE

The course will cover 8085 in detail with sufficient exposure to the industrial applications. The course will also deal with the architecture, instruction sets and control applications of 8051 with introduction to 8086. The subject will deal in detail the configurations and instructional pair configuration systems and working of various peripheral interface chips.

The study of microprocessors in terms of architecture, software and interfacing techniques leads to the understanding of working of CPU in a microcomputer. The development in microprocessors of 32 bit architecture brings them face-to-face with mainframe finding employment in R&D, assembly, repair and maintenance of hardware of microprocessors and computers.

DETAILED CONTENTS

Unit-I

Microprocessor Architecture

- Intel 8O85-Functions of ALU, Timing and Control unit, Registers," Data, Addressand Control, Buses, Pin Configuration and functions of various pins, Opcode, Operand.

Unit-II

Instruction Word Size, Fetch, Execute Operation, Machine Cycle and States,Instruction and Data flow, Timing Diagram, Memory Read Write operation, 8085 basedMicrocomputer System.

Unit-III

Instruction Set for Intel 8085

- Instruction and data formats, Addressing modes, Status Flags, Data transfer Arithmetic, Logical, Branch Group Machine Control instruction, looping, Counting and indexing, Use of Counters and Time Delays, Use of Stacks & Subroutines, Example of Assembly Language programming

Unit-IV

Interfacing and Data Transfer Schemes

- Memory Mapped I/O and I/O mapped I/O schemes, Memory interfacing, I/Ointerfacing. Data transfer scheme Programmable data transfer, DMA Data transfer, Synchronous, Asynchronous and Interrupt driven data transfer.

Unit-V

- Interrupts of 8085: Interrupt process, Maskable & Non-maskable Interrupt, Steps toinitiate and implement Interrupt, Interrupts priority, SIM & RIM instructions, Brief concept of DMA.

Reference Books

1. Introduction to Microprocessor by Mathur
2. Fundamentals of Microprocessors and Microcontrollers by B. Ram
3. Microprocessor Architecture, Programming and Applications by RS Gaonkar

DICS305

Data Communication

RATIONALE

Data communication course is intended to provide practical exposure and awareness of existing and upcoming communication technologies. The course is designed in conjunction with the course "Computer Networks" which provides concepts of networks

DETAILED CONTENTS

Unit-I
Methodology
- Need for a modulation in communication systems. Concept of AM, FM, PM, PAM, FSK, PSK and PCM (no mathematical treatment)
- Concept of bandwidth, noise and channel capacity of different communication system such as radio, microwave, different types of electrical communication lines, optical fiber system and issues like line characteristics and impedance matching.

Unit-II
Data Communication Principles
- Transmission of binary data, concept of simplex, half duplex and full duplex modes, two and four line systems.
- Byte level data communication, synchronous communication data transfer efficiency
- Synchronous communication, start-stop bits, data transfer efficiency, relative advantage and disadvantage with synchronous communication
- Frame level communication, data packets, address encoding and decoding of data packets, data encryption and decryption
- Serial and parallel data communication, comparison in terms of speed of data transfer
- Asynchronous transmission, synchronous transmission

Unit-III
Error Detecting
- Source of errors in data communications, effects of errors, data error rate and its dependency on data transfer rates. Error detecting through parity bit, block parity to detect double errors and correct single error
- Characteristics of white noise and digital noise

Unit-IV
Communicating Methods and Standards
- One to one connections, multi drop lines, method of implementation, channel capacity Multiplexed lines, time division multiplexing and demultiplexing

Unit-V
Concept of Synchronization
- Synchronization method, direct mode of communication, need for handshake mode of communication, handshake modes.

Reference Books
1. Introduction to Data Communications- A Practical Approach by Larry Hughes, Narosa Publishing House Pvt Ltd , Darya Ganj New Delhi 110002
2. Data and Computer Communication by William Stalling
3. Computer Communication and Networking by John Freer
4. Computer Networking by Tennan Baum
5. Data Communication by PS Gupta
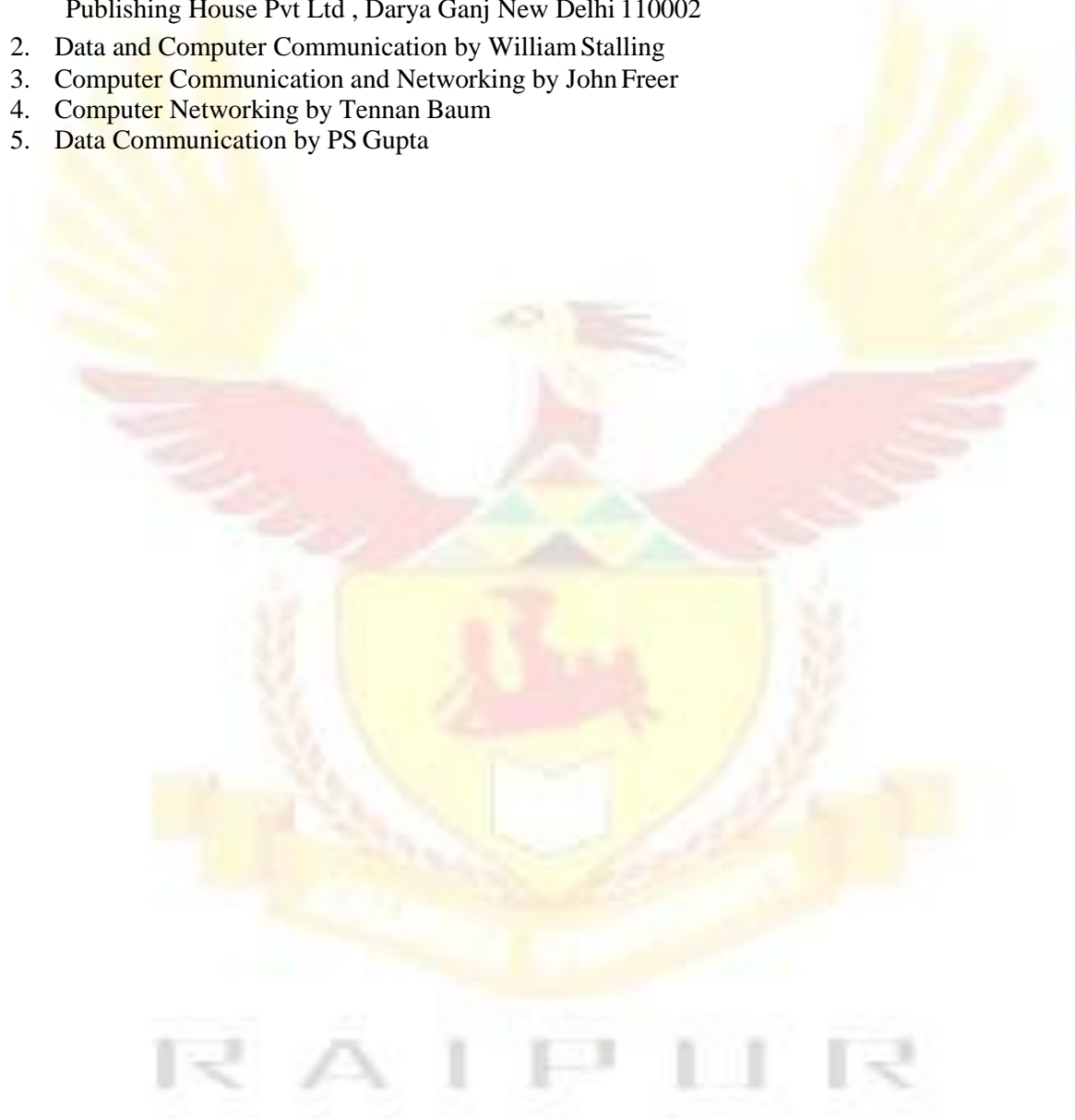
DICS306

Computer Workshop

RATIONALE

The course aims at making the students familiar with various parts of computers and how to assemble them, and different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer software installation and maintenance to make him diagnose software faults.

DETAILED CONTENTS

Unit-I
- Familiarization with various components and parts of personal computers, mother board details, hard disk and hard disk drive, floppy disk drive. CD Rom drive, DVD, keyboard, display devices, various chips (memory chips and CPU); serial and parallel ports, assembly of complete PC making it operational, fault finding.
- Fault diagnosis, repair and maintenance of inkjet, Dot matrix and Laser printers.
- Use Modems.

Unit-II
- Assembly and Dissembling of PCs: Power supply, linear power supply and switch mode power supply, trouble shooting of SMPS.

Unit-III
- Loading of various operating system, LINUX, windows NT, Windows 95 and 98. Familiarization of their features with practical demonstrations. Changing settings on Widows 2000, XP, millennium

Unit-IV
- Loading other software like MS-Office, Visual Basic, Page Maker, Corel Draw, AutoCAD etc.

Unit-V
- Virus detection, prevention and cure. Use of PC tools. Learning various types of virus such as polymorph virus, stealth viruses; boot sector virus, file virus, partition table viruses.
- Structure of floppy disk and hard disk, writing to boot sector and reading from it.

Note- Practical syllabus will be based on detailed syllabus.

Reference Books
1) PC Upgrade and Maintenance Guide 8th Edition by Mark Minasi, BPB Publication
2) Hardware Bible by Winn Rosch, Techmedia Publications
3) IBM PC and Clones by GovindaRajalu. Tata McGraw Hill, Publishers, New Delhi
4) Electronic Instrumentation and Measurement Techniques by WD Cooper and Adhelfrics. Prentice

Hall of India
5) Common Computer Circuits and Faults Vol. 1 by M. Lotia, BPB Publications
6) Monitor and Fault Diagnosis Vol. 1 and II. M. Lotia, DPB Publications
7) Unix System Administration by Unleashed. Tech. Media Publications
8) Understanding Unix Tech Media Publications
9) Linux Unleashed Tech Media Publications
10) Unix Configuration and Installation DPB Publications
11) Novel Network Novel"s Guide to Network 4.01 Networks
12) Teach Yourself Unix BPB Publications
13) Study Guide Windows NT Server and Workstation 4 Tech Media Publications
14) Complete Guide to Window NT and Workstation by Peter Norton. Tech Media Publications
15) Complete Guide to Windows 98 by Peter Norton. Tech. Media Publications
16) Training Guide Windows 98 by MCSE, Tech Media Publications

SEMESTER IV

DICS 401

Object Oriented Programming Using C++

RATIONALE

Object orientation is a new approach to understand the complexities of the real world. In contrast to the earlier approaches like procedural etc, object orientation helps to formulate the problems in a better way giving high reliability, adaptability and extensibility to the applications. The students are already familiar with this concept of programming in C which is the basic for C++. This course offers the modern programming language C++ that shall help the students to implement the various concept of object orientation practically. The students will be able to programme in the object oriented technology with the usage of C++.

DETAILED CONTENTS

Unit I

Introduction and Features

- Fundamentals of object oriented programming – procedure oriented programming Vs. object oriented programming (OOP)

- Object oriented programming concepts – Classes, reusability, encapsulation, inheritance, polymorphism, dynamic binding, message passing

Language Constructs

Review of constructs of C used in C++ : variables, types and type declarations, user defined data types; increment and decrement operators, relational and logical operators; if then else clause; conditional expressions, input and output statement, loops, switch case, arrays, structure, unions, functions, pointers; preprocessor directives

Unit II

Classes and Objects

- Creation, accessing class members
- Private Vs Public
- Constructor and Destructor
- Objects

Member Functions

- Method definition
- Inline Implementation
- Constant member functions

Unit III

Overloading Member Functions (4 hrs) Need of operator overloading, prefix and postfix overloading binary operators, operator overloading, instream/outstream operator overloading

Inheritance

Definition of inheritance, protected data, private data, public data, inheriting constructors and destructors, constructor for virtual base classes, constructors and destructors of derived classes, and virtual functions, size of a derived class, order of invocation, types of inheritance, single inheritance, hierarchical inheritance, multiple inheritance, hybrid inheritance

Unit IV

Polymorphism and Virtual Functions

Importance of virtual function, function call binding, virtual functions, implementing late binding, need for virtual functions, abstract base classes and pure virtual functions, virtual destructors

Unit V

File and Streams

Components of a file, different operation of the file, communication in files, creation of file streams, stream classes, header files, updating of file, opening and closing a file, file pointers and their manipulations, functions manipulation of file pointers, detecting end-of-file.

Object Oriented Programming in C++ Lab

1. Write a function using variables as arguments to swap the values of a pair of integers
2. An election is contested by five candidates. The candidates are numberd 1 to 5 & voting is done by marking the candidate number on the ballot paper. Write a program to read the ballot & count the votes cast for each candidate using an array, variable count. In case, a number read is out side the range 1 to 5, the ballot should be considered as a ' spoilt ballot' and the program should also count the number of spoilt ballot.
3. Write a program to read a matrix of size m*n from the keyboard and display the same on the screen.
4. Write a macro that obtain the largest of three number.
5. As the practical 4, using inline function. Test the function using the main program.
6. Define a class to represent a bank account including the following members:- Data members
   a) Name of the depositors
   b) Account number
   c) Type of account
   4. Balance amount in the account Member
      function
         - To assign initial values
         - To deposit an amount
         - To withdraw an amount after checking the balance
         - To display the name and balance.
7. Modify the class and the program of practical 6 for handling 10 customers.
8. Create 2 classes OM and DB which store the value of distance. DM store distances in meters and cm and DB in feet and inches. Write a program that can read values for the class objects and add 1 object OM with another object of DB.   .
   Use a friend function to carry out the addition operation the object that stores the results may be a DM object or a DB object, depending upon the units in which the results are require. The display should be in the format of feet and inches or meters and cms depending on the object on display.
9. A book shop maintains the inventory of books that are being sold at the shop the list includes details such as author, title and publisher and stock position. Whenever a customer wants the book,

the sales person inputs the title and author and the system search the list and display whether it is available ornot. If it is not, a appropriate message is displayed, if it is, then the system displays the book details and requests for the number of copies require. If the requested are available, the total cost of the required copies is displayed: otherwise the message" Required copies not in stock"is displayed. Design a system using a class called books with suitable member functions and constructors. Use new operator in constructor to allocate memory space require.

10. Define a class string that could work as a userdefined string type include constructors that will enable us to create an .un-initialized string

        String s1; :/ string with length 0

And also to initialize an object with string constant at the time of creation like String

        s2("well done"); .

Include a function that adds two strings to make a thirdstring.

11. Create a class float that contains 2 float data member. Over load all the 4 arithmetic operators so that do operate on the objects of float.

12. Create a class MAT of size m*o. Define all possible matrix operation for MAT type objects

13. Define 2 classes POLAR and RECTANGLE to represent points in the POLAR and RECTANGLE systems. Use conversion routines to convert from one system to theother.

14. Create a base class called shape use this class to store two double type values that could be used to compute the area of fig. Derive the specific class called TRIANGLE and RECTANGLE from the data shape. Add to base class, a member function get - data ( ) to initialize base class data members and another member and another member function display – area( ) to compute and display the area of the fig.. Make display – area ( ) as a virtual function and redefine function in the derived classes to suit their requirements,

Using these 3 classes design a program that will accept dimension of RECTANGLE or TRIANGLE interactivity and display the area.

Remember the 2 values given as input will be treated as length of 2 sides in the case of rectangle and as base and height in the case of triangles and used as follows:

Area of rectangle   = x*y

Area of triangle   = 1/2 *x*y

15. Exercise on file handling

Reference Books

1. C++: An introduction to programming by Jense Liberty Tim Keogh: BPB Publications, NewDelhi
2. OO Programming in C++ by Robert Lafore: , Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi
3. Object Oriented Programming Using C++, Sanjeev Sofat, Cyber Tech. Publication, NewDelhi
4. Object Oriented Programming in C++ by E. Balaguruswamy, TMH Publishing Co. Ltd., NewDelhi
5. C++ Primier by Stephen Parata , TMH Publishing Co. Ltd., NewDelhi
6. C++ Primer by SB Lippman and J Lajoie; Addison Wesley (Singapore) Pvt. Ltd., NewDelhi
7. Mastering C++ by KR Venugopal and Rajkumar, T Ravishankar; Tata McGraw Hill Publishing Co. Ltd., New Delhi
8. Object Oriented Data Structuring using C++ by KS Easwarakumar; Vikas Publishing House Pvt. Ltd., New Delhi
9. Programming in C and C++ by SS Khandare; S Chand and Company Ltd. NewDelhi
10. Object Oriented Programming using C++ by B Chandra, Narosa Publishing House Pvt Ltd., Daryaganj, New Delhi 110002

DICS 402

Windows And Linux Operating System

RATIONALE

The knowledge of this subject will enable the students to understand the concepts of Linux and its potential.
The students will also get hand on experience of linux after undergoing this course.

DETAILED CONTENTS

Unit I
Linux Operating System
.   Introduction
     History of Linux and Unix, Linux Overview, Linux releases, open linux
.   Linux Commands and Filters
     Mkdir, CD, rmdir, pwd, ls, who, whoami, cat, more, fail, head, concept of, mv, chmod, grep,
     wc, comm., split, sort, diff, kill, write, wall, merge, mail, news
.   Shell
     The command line special characters and file arguments, standard input/output and
      redirection, pipes, redirecting and piping with standard errors, shell scripts, jobs.

Unit II
Linux file Structure
     Linux files, file structure, listing displaying and printing files, managing directories, file and
     directory operations.
.   Vi Editor
     Vi editing commands, advanced Vi editing commands, line editing commands, options in

Unit III
System Administration
     System management, managing users, installing and managing devices, floppy disk
     management, file system administration, backups.

Unit IV
Windows Network Operating System
     Introduction
     Windows operating system - its features and capabilities; comparison with OS h/w
     Requirements for Windows 98, 2000 XP, Millennium,NT.

Unit V
Control Program and Control Panel
Customizing desktop, installing, removing programs, managing your files and folders (creating, renaming,

deleting, moving, copying etc.)

Windows & Linux Operating System Lab

1. Creating and managing user accounts
2. Practice on Linux commands
3. Practice on vi commands
4. Write and execute at least 10 programmes in Linux using shells such as
    -   Factorial of numbers
    -   Even/odd numbers
    -   Fibonacci series
    -   Prime numbers
    -   Arrange of numbers
    -   Reverse of numbers
    -   Lower case to upper case
    -   Greatest of three numbers etc.
5. Installing and configuring X-windows
6. Create file and folder
7. Searching a file
8. Installation of device drivers
9. Creating user accounts
10. Customizing desktop
11. Setting monitor resolution

Reference Books
1. Linux – The Complete Reference by Richard Peterson, Tata McGraw Hill, New Delhi
2. Linux – Install and Configuration Black Book by Die Annleblanc and Issac Yates, IDG Books India Private Ltd., Delhi
3. Unleashed Linux by Tech Media Publishers.

DICS 403

Relational Database Management System

RATIONALE

Database and database systems have become an essential component of everyday life in modern society. This course will acquaint the students with the knowledge of fundamental concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages.

DETAILED CONTENTS

Unit I
Introduction- Database   Systems
Database   and   its   purpose
Characteristics of the database approach
Advantages and disadvantages of database systems

Classification of DBMS Users

Actors on the scene
Database Administrators, Database Designers, End Users, System
Analysts and Application Programmers
Workers behind the scene (DBMS system designers an implementers, tool developers, operator and maintenance personnel)

Unit II
Database System Concepts and Architecture

Data models, schemas, instances, data base state
DBMS Architecture
- The External level
- The conceptual level
- The internal level
- Mappings
Data Independence
- Logical data Independence
- Physical data Independence
Database Languages and Interfaces
- DBMS Language
- DBMS   Interfaces
Classification of Database Management Systems

Unit III

Data Modeling using E.R. Model (Entity Relationship Model
Data Models Classification : File based or primitive models, traditional data models, semantic data models

Entities and Attributes
Entity types and Entity sets
Key attribute and domain of attributes
Relationship among entities

Unit IV
Relational Model:
Relational Model Concepts: Domain, Attributes, Tuples and Relations
Relational constraints and relational database schemes

- Domain constraints
- Key constraints and constraints on Null
- Relational databases and relational database schemes
- Entity integrity, referential integrity and foreign key

Unit V
Functional Dependencies and Normalization
Functional Dependencies

- Trivial and Non-trivial dependencies
- Closure of a set of dependencies and attributes
- Irreducible set of dependencies

Normalization

- Non-loss decomposition and functional dependencies
- First, Second and Third normal forms.
- Boyce/Codd normal form

Structured Query Language

Data definition language : Create, Alter, Drop commands
- Data Manipulation Language (DML)
- Select command with where clause using conditional expressions and Boolean operators, group by clause, like operator.
- Insert, Update and Delete commands

RDBMS Lab
1. Overview, Features and functionality, Application development in MS-Access
2. Exercises on different forms of select statement, altering and droping of tables
3. Exercises on creation of tables
4. Exercises on insertion of data into tables
5. Exercises on deletion of data using different conditions
6. Exercises on UPDATE statement

Reference Books
1) Fundamentals of Database Management Systems by Dr Renu Vig and Ekta Walia, - an ISTE, Publication, New Delhi
2) Database Management Systems by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
3) An introduction to database systems by Date C.J. Adison Wesley

4) Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley
5) An Introduction to database systems by Bipin C. Desai, Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi 110 002
6) SQL Unleashed by Hans Ladanyi Techmedia Publications, New Delhi
7) Oracle 8, The complete reference by Koch and Loney, Tata McGraw Hill Publications New Delhi

DICS 404

Multimedia Applications

RATIONALE

Multimedia is a new concept emerged in the recent times. Now this technology is being widely used in web pages, motion pictures and interactive presentations, animation etc. Multimedia has made a significant impact in training/education, business presentations, public information access etc. This course intends to introduce and expose multimedia technology and various factors and features of authoring software. It will also help in making the internet application richer in content and presentation

DETAILED CONTENTS

Unit I
Introduction
- Introduction to multimedia, hypertext, hypergraphics, animation, application in education and training, science and technology, kiosks, business and games

Unit II
Multimedia Hardware
- Multimedia PC configuration, features and specifications of sound and video interfaces, OCR, touch-screen, scanners, digital cameras, speakers, printers, plotters, optical disks ,and drives as CDROM and DVD. multimedia networks

Unit III
Multimedia Files
- Image and sound file formats, multimedia file formats, compression, standards and techniques, features of software to read and write such files.

Unit IV
Photo-shop
- Photo-shop workshop, image editing tools, specifying and adjusting colors, using gradient, tools, selection and move tools, transforming path drawing and editing tools, using, channels, layers, filters and actions

UNIT V
Flash
- Exploring interface, using selection and pen tools, working with drawing and painting tools, applying color, viewing and manipulating time line, time line/stage relationship, animating (frame-by-frame, tweening), guiding layers, importing and editing sound and video clips in flash, working with 3-D graphics

Director
- Exploring interface: score editor, cast editor, toolbars, library, palette, inspector, menu bar, cast libraries, painting techniques, importing images, working with stage, sprites and score; using text, using sound, using digital video, creating behaviour, using behaviour inspector, basics of lingo

Multimedia Application Lab

1. Configuring multimedia devices to PC (Personal computer)
2. Installing and use of various multimedia devices
   - Scanner
   - Digital camera, web camera
   - Mike and speakers
   - Touch screen
   - Plotter and printers
   - DVD
   - Audio CD and Video CD
   - Reading and writing of different format on a frame CD
   - Transporting audio and video files
   - Using various features of Director
   - Using various features of Flash
   - Using various features of Photo-shop
   - Making multimedia presentations combining Director, Flash, Photo-shop, such as department profile, lesson presentation, games and project presentations

Reference Books

1. Multimedia An Introduction by Villam Casanova and Molina; Prentice Hall of India, New Delhi
2. Multimedia Bible by Win Rosch
3. Multimedia Making it work by Baughan, Jay
4. Director and Lingo Bible by John and Nyquist and Rober Martin, IDG Books India Pvt. Ltd.,
5. Mastering Macro Media Director 5 by Feudnon; BPB Publication, New Delhi
6. Photo-shop for Windows Bible by Deke Maclelland IDG Books India Pvt. Ltd., New Delhi
7. Multimedia Technology and Application by Hillman, Galgotia Publications, New Delhi
8. Flash 5 Bible by Rein Hardit, IDG Books India Pvt. Ltd.
9. Flash 5 in easy steps by Vandome IDG Books India Pvt. Ltd.

DICS 405

Computer Organisation

RATIONALE

This course aims to develop knowledge and skills in the subject of organization of components of a computer. The course will enable the students to be familiar with computer hardware, standards, instruction set and assembly language programming. It deals with the architecture of major components of a computer and functioning of these different components.

DETAILED CONTENTS

Unit I
Introduction to Computer Organization:
- Structure and Function: Introduction to components, functions of individual component with block diagram, Introduction to machine language, assembly language, assembler, compiler, interpreter. What is BIOS, Functions of BIOS

Unit II
System Buses and Expansion Buses
- Introduction, system buses in PCs, expansion buses in PCs, ISI, EISE, VESA, PCI Processor

- Introduction, role of processor in a PC, working of processor with the help of a block diagram. processors generations and processor families, inside a processor, processor packaging, processor sockets. Processor Instruction Sets - RISC Technology, different RISC processors available, difference between RISC and CISC processors.

Unit III
Input-output Organization
- Peripheral devices, input/output interface, synchronous vs asynchronous data transfer, Direct Memory Access(DMA), priority interrupt, Input-output processor data communication processor.

Unit IV
Memory Organization
- Introduction to main memory. secondary memory, cache memory, physical vs. virtual memory, associate memory, memory management unit, memory mapping, paging and page replacement polices.

Unit V
Introduction to Multi-Processor System:

Reference Books
1. Computer organization and Architecture William Stalling, Prentice Hall of India, New Delhi..
2. Computer System Architecture by M. Morris, Prentice Hall of India, New Delhi.
3. Computer Architecture and Organization by John P. Hayes, Mc Graw Hill Publishers.

4. Computer Fundamentals Architecture and Organization by B.Ram, New Age Publishing House, New Delhi
5. Computer architecture by Rafiquzzaman, M ; Prentice Hall of India, New Delhi.
6. Fair head – 80836/80486 BPB Publication, New Delhi.
7. Hardware and Software of Personal Computers by Bose, SK; Willey Eastern Ltd; New Delhi.
8. Structured Computer Organization by Tanenbaum Andrew S; Prentice Hall of India, New Delhi.
9. Upgrading and Preparing PCs by Scott Muller, Techmedia Publications, New Delhi
10. Computer Organization and Architecture by Linda Labour, Narosa Publishing House Pvt. Ltd. Darya Ganj, New Delhi.

DICS 406

Computer Peripherals And Interfacing Devices

RATIONALE

A computer engineer should be able to interface and maintain key-board, printer, mouse monitor etc along with the computer system. The course provides the necessary knowledge and skills regarding working construction and interfacing aspects of peripherals. The students will get to know how various peripherals communicate with central processing unit of the computer system and pattern their respective operations. The student will be able to maintain keyboard, printer, monitors and Power Supplies (CVTs and UPSs) along with computer system. This subject provide the required background of computer installation, maintenance and testing of peripheral with micro computers So a course on Computer Peripherals and Interfacing Devices is required to develop such skills.

DETAILED CONETENTS

Unit I
Video Display
- The basic principle of working of video monitors, video display adopters, video modes
- Video display EGA/VGA/SVGA/PCI adapters and their architecture
- Overview of Raster scan, vector graphic, their main difference and relative advantages
- Concept of reduction and bandwidth of monitors refreshing of screen

Key Board and Mouse
- Basic principle of working of key board and mouse, scan codes.

Unit II
Disk Drives
- Constructional features and working of hard disk drive, floppy disk drive, optical and DVD disk drive. Logical structure of disk and its organization, boot record, and CD writer

Other Devices
- Working principle of various input devices such as keyboards, Mouse, Scanner, Tablets, touch screen, light pen, digitizers and joystick

Printers
- Principle and working of DeskJet, dot matrix and laser printers.

Unit III
Principles of working and features of scanner, plotter, digitizer and Modem
Input/Output Drivers
- Software aspects of peripheral devices
- Role of device drivers
- DOS and Unix device drivers

Unit IV
Power Supplies
- SMPS used in computers and constant voltage transformers

- On Line/Off Line uninterrupted power supplies (UPS), basic principle of working their importance and maintenance

The BIOS and DOS Services

The basic idea of BIOS and DOS services for diskette, serial port, key board and printers.

Unit V

Future Trends

- Various types of digital buses. Analysis of recent progress in peripheral and buss systems.
- Some aspects of cost performance analysis while designing the system

Reference Books

1. B. Govinda Rajalu, IBM PC and Clones, "Hardware Trouble Shooting and Maintenance", Tata McGraw Hill 1991
2. Robert, S Lai: The waite group writing MS DOS Device, Drives, Addison, Wesley Publishing Co. 2nd Ed. 1992.
3. SK Bose "Hardware and Software of Personal Computers" Wiley Eastern Limited, New Delhi.
4. Hall, Douglas: "Microprocessors and Interfacing" McGraw Hill
5. Uffenbeck. " Microprocessors and Interfacing "
6. Fundamentals of Computers by Sukhvir Singh; Khanna Publishers, New Delhi
7. Computer Peripherals for Micro Computers, Microprocessor and PC by Levis Hahensteu
8. Inside the PC (Eight Edition) by Peter Norton; Th Media Publication

SEMESTER V

DICS 501

COMPUTER NETWORKS
RATIONALE
The future of computer technology is in computer networks. Global connectivity can be achieved through computer networks. It is important to understand the function of computer networks. Knowledge about hardware and software requirements of networks is essential. The emphasis of the course is towards the various components and software required to make a network operational

DETAILED CONTENTS

Unit I
Networking Basics
> Definition of network, Models of network computing, Network models, LAN, MAN and WAN, needs and goals of networking topology, network architecture, need for protocols, OSI Reference Model, layer services, primitives and service access points.

Data Link Layer
> DLL design issues, elementary data link protocols, sliding window protocols

Unit II
Network Layer
> Brief discussion on need for network layer, routing algorithm, congestion and its control methods, internetworking

Unit III
Transport Layer
> Transport service primitives, quality of service, barkeley sockets, elements of transport protocols

Session Layer
> Functioning of session layer, OSI primitives, retrotic procedure calls
> Data Compressing
> Huffman arithmetic codes, data encryption, public encryptography and its uses

Unit IV
Presentation Layer
> Presentation layer primitives, function of presentation layer

Unit V
Application Layer
> Application layer design issue, file transfer and management, E-mail, virtual terminal

Network Connectivity
> NICs, hubs, switches, repeaters, multiplexers, modems, routers

Reference Books

1. Computer Networks by Tanenbaum, Andrew S, Prentice Hall of India, New Delhi
2. Data Communications and Networking by Foronzan, Tata McGraw Hill, New Delhi
3. Local area Networks by Peter Hudson
4. Understanding Local area Network by Neil Jenkins

DICS 502

Visual Basic

RATIONALE
VB is a programming language, which enables a programmer to write programs and develop application packages to produce solution to live problems. After undergoing this course, the students will be able to understand the principles of Active-X objects and write programs in VB.

DETAILED CONTENTS

Unit I
Introduction to Visual Basic

Features and applications of VB – concept of integrated development environment (IDE) – project application like standard Exe

VB Structure

Variable declaration types – user defined data types – scope and life of a variable – arrays – constructors – control flow statements – procedures and functions.

Unit II
Designing the User Interface

Design aspects of VB forms – Elements of user Interface – properties of controls – textbox, label, command button, check box, list box, picture, image shape timer – designing forms and displaying messages using above controls – control arrays.

Unit III
Menus and Common Dialogue Control

Creating menus at design time using menu design window – control menus and runtime – create shortest keys for pop up menus – common dialogue control.

Unit IV
Display date, time, string type conversion and Printing Information

Data reports and environments – display tabular data in report form– fundamentals of printing – printing with print form method.

Unit V
Data Base Programming, Connecting with database, using DAO, RDO and ADO , Working with inbuilt Active X, Windows common control, creating own Active X through , Active X control, Active X EXE, difference between EXE and DLL

List of Practicals
1) Exercise on opening projects like standard Exe, Active-X EXE and Active-X control
2) Exercise on all the menus of opening window of VB
3) Exercise on all basic controls
4) Exercise on design form like calculators, traffic lights

5) Exercise on small application using appropriate commands
6) Exercise on menus
7) Writing programs using arrays
8) Exercise on creating reports
9) Exercise on Data base connectivity
10) Exercise on creating own active X, component

Reference Books

1. Mastering VB, by Evangelous Petroustsos BPB Publications, New Delhi
2. Teach Yourself VB by Techmedia Publications, New Delhi
3. Microsoft VB Manual by MS Press
4. Visual Basic & .Net by Null Dale, Michael Mc Millan, Chip Weems, Mark Headington, Narosa Publishing House Pvt Ltd, Darya Ganj, New Delhi 110002

DICS 503

Oracle

RATIONALE

This course will provide students the knowledge of Relational Database Management (RDBMS) using ORACLE. After completion students will be able to create data basis according to their requirements along with the capabilities of modifying database, providing securing with the help of access permissions etc.

DETAILED CONTENTS

Unit I

Introduction to Managing Data

Understand human data: Cell name, cell length; Basic database concepts; Oracle – The product philosophy; Introduction to oracle and its tools; The oracle database administrator; Interaction between oracle engine and oracle client tools; Commercial application development using oracle – oracle‟s suite of products

Interactive SQL

Oracle and client server technology, invoking SQL and PLUS, data manipulation in DBMS (Table, Entity), Data types in ORACLE, creation of TABLE, creating fable from a table

Insertion of data into a table, viewing data in the tables, deletion operations, updating the contents of a table, modifying the structures of tables (adding new columns) modifying existing columns etc., Renaming tables, destroying tables, examining objects like table, views created by a user

Unit II

More on SQL

Computations on Table data: Arithmetic operators, logical operators, renaming columns used with expression lists, range searching, pattern matching

SYSDATE

Oracle Functions: Group functions (Aggregate functions), scalar function (single row function), date conversion functions

Data constraints: Types of data constraints, column level constraints, table level constraints, NULL value concepts, the UNIQUE, PRIMARY KEY, FOREIGN KEY AND CHECK constraint, defining and dropping constraints in the ALTER TABLE command, default value concept etc

Group by clause, HAVING clause

Manipulating Dates in SQL: TO-CHAR, TO-DATE

SUBQUERIES, JOINS (EQUI JOIN AND SELF JOIN), UNION, INTERSECT AND MINUS clause

Unit III

SQL Performance Tuning   (9 hrs)

INDEXES: Creation of simple, composite and unique index, dropping indexes

VIEWS: Creation of views, renaming the columns of a view, selecting a data set from a

view, up-date-table views, destroying a view
SEQUENCES: Creating sequence referencing a sequence, altering a sequence, dropping a sequence

Unit IV
Security   Management   Using   SQL
    GRANT AND REVOKE Commands
Introduction to PL/SQL
    Advantages of PL/SQL, syntax of PL/SQL block, PL/SQL (characterset, leterals, data types, variables, constants, logical comparisons, displaying user messages on screen comments, conditional and iterative control

Unit V
More on PL/SQL
    ORACLE TRANSACTIONS: Closing transactions, creating savepoint
    CURSORS: Types of cursors, implicit cursor and explicit cursor, opening a cursor, cursor for loops, parameterized cursors

List of Practical
1. Exercises on different forms of select statement
2. Exercises on group by and having clause
3. Exercises on creation of tables
4. Exercises on creation of tables using constraints
5. Exercises on insertion of data into tables
6. Exercises on deletion of data using different conditions
7. Exercises on UPDATE statement
8. Exercises on SUBQERIES
9. Exercises on Indexes, views and sequences
10. Exercises on data functions, group and scalar functions
11. Exercises on JOINS, Grant and remove privileges
12. Exercises on creation of PL/SQL blocks
13. Exercises on cursor management in PL/SQL
14. Write a database trigger after update, delete
15. Write a database before delete, update

Reference Books
1. SQL, PL/SQL by Ivan Bayross; BPB Publications, New Delhi
2. ORACLE "The Complete Reference" By George Koch and Kevin Loney; Tata McGraw Hill, New Delhi

DICS 504

Internet and Web Designing

RATIONALE

This course will enable the students to understand the basics of internet and various application of internet like e-mail, FTP, Telnet, Newsgroups and video conferencing In addition, this course develops competency amongst the students to design professional web sites and interactive web pages. They will have overview of different technologies like of HTML, DHTML, XML, CGI, ASP, JSP, Java Scripts, VB Scripts.

DETAILED CONTENTS

Unit I
Internet Basics

Concept of internet and its evolution, Application and use of internet in various fields of Science and Technology, Specification and technical details for establishing Internet. Types and functions of modems, IP addressing, internet domains, domain name server, TCP/IP protocols, Internet service providers, Intranets

Internet Connectivity

Telephone line, cable, leased line, ISDN, VSAT, RF link

Unit II
World Wide Web (WWW):

World Wide Web and its evolution, web page, web server, HTTP protocol. Examples of web servers.

Navigation Tools: Netscape and Internet Explorer to surf Internet, Uniform Resource Locator (URL)

Hypertext, hyperlinks and hypermedia, URL, its registration, browsers, search engines, proxy servers

Unit III
Internet Applications:

E-mail, Telnet, FTP, IRC, NNTP, Video conferencing, e-commerce

Developing Portals Using HTML

Basic structure of HTML, designing a web page, inserting links images, horizontal rules, comments. Formatting text, title, headings, colours, fonts, sizes, simple tables and forms. HTML tags, hyperlinks. Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames

Unit IV
Using Front Page

Front page editor, Front page explorer

Client-side Scripting: VB Scripting Vs Java Script,

Introduction to Java Scripts, event handling, verifying forms, working with browser windows, cookies, embedding with HTML

Unit V
Server-side Scripting: Scripting methods,
Java Server Pages (JSP)
Active Server Pages (ASP)
   Text processing using ASP, Handling server/Client requests, Accessing databases, using
   IIS web server; ASP Objects
   Developing Interactive Web Pages using Java scripts/VB Scripts/Java script/ASP/JSP/CGI

List of Practicals
1. Configuring computer system to access internet
2. Using e-mail
3. Using WWW for accessing relevant information
4. Using Telnet
5. Using FTP
6. Using IRC
7. Creating Web pages using HTML
8. Creating web pages using front page
9. Demonstration of audio-video conferencing
10. Demonstration of e-commerce transaction
11. Design of Forms using Java Script or Visual Basic Script
12. Validation of user queries and responses in the Forms using Java Script or VB script
13. Create a Homepage with frames, animation, background sound and hyperlinks
14. Design Shopping Cart for e-commerce applications
15. Develop hitometer for each client i.e. number of visitors. Visit to a site.
16. Designing simple server side program which accept some request from the client and respond
17. Establishing sessions between servers and clients
18. Design fill-out form with text, check box, radio buttons etc and embed Java script or VB script to validate users input.
19. Develop simple server side program in ASP (Active server pages) which accept some request from the client and respond.
20. Develop interface with database (MS-Access etc) for online retrieval and storage of data through HTML form.

Reference Books

1. Internet 6-in-1 by Kraynak and Habraken, Prentice Hall of India Pvt. Ltd., New Delhi
2. Using the Internet IV edition by Kasser, Prentice Hall of India Pvt. Ltd., New Delhi
3. Using the World Wide Web, (IInd edition) by Wall, Prentice Hall of India Pvt. Ltd., New Delhi
4. Internet for Everyone by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
5. Practical Guide and Internet by AB Tiwana; Galgotia Publications Pvt. Ltd., New Delhi
6. HTML – 4 for World Wide Web by Castro Addison Wesley (Singapore) Pvt. Ltd., New Delhi
7. Principles of Web Designing Joel Sklar, Web Warrior Series Available with Vikas Publishing House Pvt. Ltd., New Delhi
8. HTML 4.0 Unleashed by Rick Dranell; Tech Media Publications
9. Teach Yourself HTML 4.0 with XML, DHTML and Java Script by Stephanie, Cottrell, Bryant; IDG Books India Pvt. Ltd., New Delhi
10. Dynamic Web Publishing – Unleashed Tech Media
11. Using Active Server Pages by Johnson et.al. Prentice Hall of India, New Delhi

12. Web Development with Visual Basic with CD ROM by Chapman; Prentice Hall of India, New Delhi
13. Java Server Pages (JSP) by Pekowsky Addison Wesley (Singapore) Pvt. Ltd., New Delhi
14. Active Server Pages (ASP) by Keith Morneau Jill Batistick Web Warrier Series Available with Vikas Publishing House Pvt. Ltd., New Delhi
15. ASP Unleashed Tech Media Publication
16. JSP O"Reilly SPD Publishers Hans Bergsten
17. Java Script in 24 hrs Tech Media Publications
18. Java Servlets by O"Reilly SPB Publishers
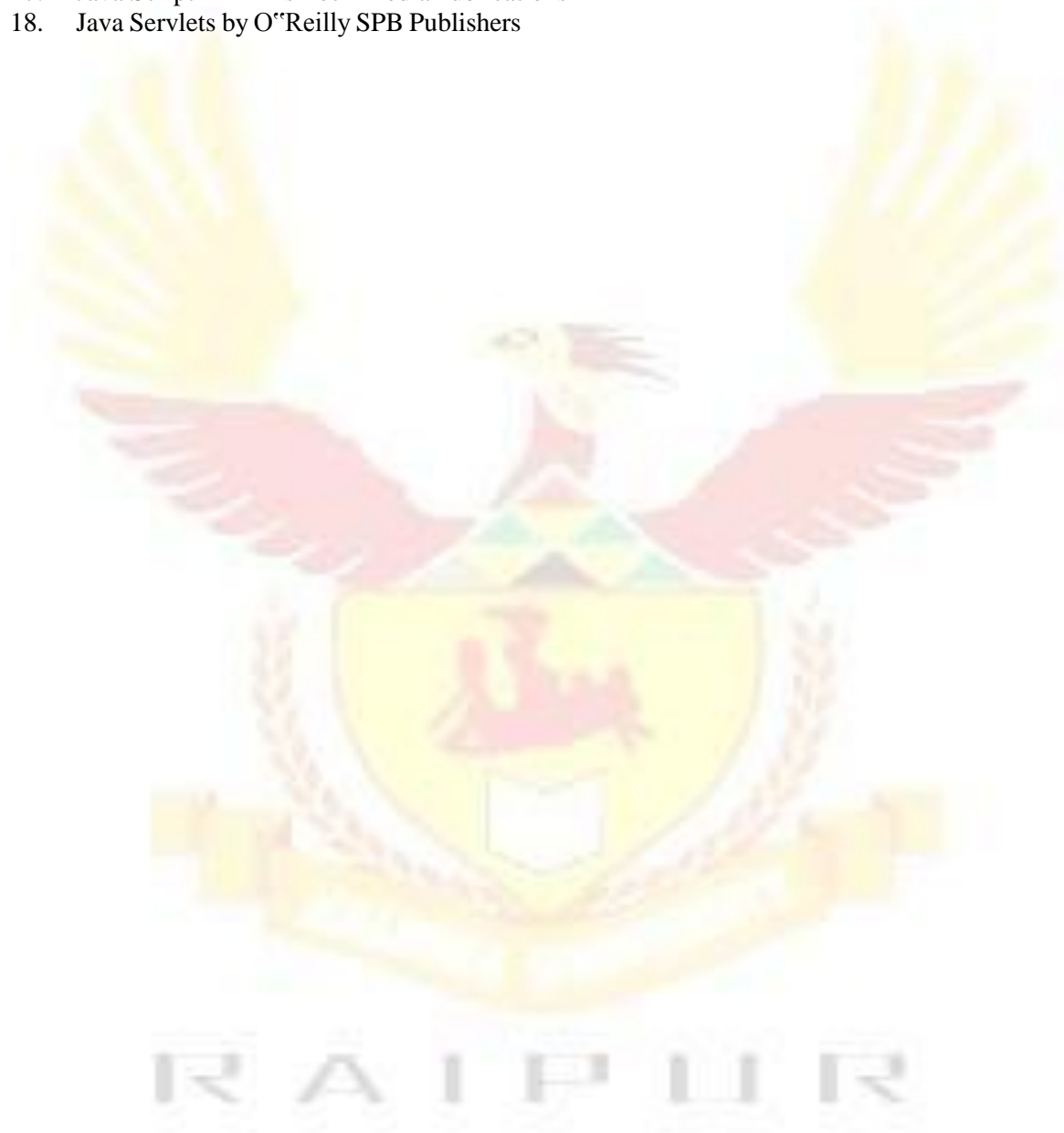
DICS 505

Software Engineering

RATIONALE
This subject will enable the diploma students to have awareness about software engineering, various matrics, planning about software, cost estimation, software design etc.

DETAILED CONTENTS

Unit I
Introduction to Software (S/W) Engineering
Introduction, size factors. Quality and productivity factors. Management issues, models and waterfall, spiral, prototyping, fourth generation techniques, s/w process
Software Matrics Engineering
Size, function, design, oriented matrics, halstead software science Mcafe complexity

Unit II
Planning
The development process, an organizational structure, other planning activities
Software Cost Estimations
Cost factors, cost estimations techniques. Staffing level estimation, estimating software maintenance costs, COCOMO

Unit III
Software Requirements Definition
Problem analysis, requirement engineering. The software requirements specifications (SRS), formal specifications techniques, characteristics of a good SRS

Unit IV
Software Design and Implementation Issue
Fundamental design, concept design notations, design techniques, structured coding techniques coding styles, documentation guidelines

Unit V
Verification and Validation Techniques
Quality assurance work through and inspections static analysis, symbolic execution unit testing, formal verifications. Black box and white box testing techniques
Maintenance Overview, Configuration management

Reference Books
1. Software Engineering Concept by Richard Fairley, Tata McGraw Hill Publishers, New Delhi
2. An Integrated Approach to Software Engineering by Pankaj Jalote, Narosa Publishing House Pvt Ltd, Darya Ganj, New Delhi 110002
3. Software Engineering – A Practitioner''s Approach by RS Pressman, Tata McGraw Hill

Publishers, New Delhi
4. Software Testing Techniques by B Beizer
5. Software Engineering by KK Aggarwal and Yogesh Singh

DICS 506

Industrial Training

Industrial Training aims at exposing the students to field practices, size and scale of operation and work culture at practical sites. For this purpose, students at the end of fourth semester are required to be sent for a period of 4 weeks to industry. Each student is supposed to study the material and technology used at site and prepares a detailed report of the observation of process seen by him/her. These students should be supervised and guided by respective subject teachers. Each teacher may guide a group of four to five students. The teacher along with field supervisors will conduct performance assessment of students.

The components of evaluation will include the following.
a) Punctuality and regularity 15%
b) Initiative in learning new things 15%
c) Relationship with workers 15%
d) Industrial training report 55

SEMESTER VI

DICS601

Entrepreneurship Development & Management

RATIONALE
Entrepreneurship Development and Management is one of the core competencies of technicalhuman resource. Creating awareness regarding entrepreneurial traits, entrepreneurial supportsystem, opportunity identification, project report preparation and understanding of legal andmanagerial aspects can be helpful in motivating technical/ vocational stream students to start theirown small scale business/enterprise. Based on the broad competencies listed above, followingdetailed contents are arrived to develop the stated competencies.

DETAILED CONTENTS

Unit-I
Entrepreneurship
- Concept/Meaning
- Need
- Competencies/qualities of an entrepreneur

Entrepreneurial Support System
- District Industry Centres (DICs)
- Commercial Banks
- State Financial Corporations
- Small Industries Service Institutes (SISIs), Small Industries Development Bank ofIndia (SIDBI), National Bank for Agriculture and Rural Development (NABARD),National Small Industries Corporation (NSIC) and other relevantinstitutions/organizations at State level

Unit-II
Market Survey and Opportunity Identification (Business Planning)
- How to start a small scale industry
- Procedures for registration of small scale industry
- List of items reserved for exclusive manufacture in small scale industry
- Assessment of demand and supply in potential areas of growth
- Understanding business opportunity
- Considerations in product selection
- Data collection for setting up small ventures

Unit-III
Project Report Preparation
- Preliminary Project Report
- Techno-Economic feasibility report
- Project Viability

Managerial Aspects of Small Business
- Principles of Management (Definition, functions of management viz planning,organisation, coordination and control
- Operational Aspects of Production
- Inventory Management
- Basic principles of financial management
- Marketing Techniques
- Personnel Management
- Importance of Communication in business

Unit-IV
Legal Aspects of Small Business
- Elementary knowledge of Income Tax, Sales Tax, Patent Rules, Excise Rules
- Factory Act and Payment of Wages Act

Environmental considerations
- Concept of ecology and environment
- Factors contributing to Air, Water, Noise pollution
- Air, water and noise pollution standards and control
- Personal Protection Equipment (PPEs) for safety at work places

Unit-V
Motivation
- Factors determining motivation
- Characteristics of motivation
- Methods of improving motivation
- Incentives – pay, promotion, rewards

Leadership
- Need for leadership
- Functions of a leader
- Factors to be considered for accomplishing effective leadership

REFERENCE BOOKS

1. A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; AapgaPublications, Panchkula (Haryana)
2. Entrepreneurship Development by CB Gupta and P Srinivasan, Sultan Chand and Sons,New Delhi
3. Environmental Engineering and Management by Suresh K Dhamija, SK Kataria and Sons,New Delhi
4. Environmental and Pollution Awareness by Sharma BR, Satya Prakashan , New Delhi
5. Thakur Kailash, Environmental Protection Law and policy in India: Deep and DeepPublications, New Delhi
6. Handbook of Small Scale Industry by PM Bhandari
7. Marketing Management by Philip Kotler, Prentice Hall of India, New Delhi
8. Total Quality Management by Dr DD Sharma, Sultan Chand and Sons, New Delhi.
9. Principles of Management by Philip Kotler TEE Publication

DICS602

Computer Graphics

RATIONALE

This subject will enable the students to have awareness about fundamental graphics which can be generated through computers using programming language C. He will be able to make picture and introduce motion in them using basic transformation.

DETAILED CONTENTS

Unit-I

Graphic Systems
- Display devices, physical input and output devices, display processors graphics software Coordinate representation, graphics functions and standards.

Scan conversion and Output Primitives
- Scan converting the point
- Scan converting the straight line - Bresenham's line algorithm.
- Scan converting a circle - Defining a circle
- Bresenham's circle algorithm.
- Region filling - introduction, flood filling, boundary filling
- Side effects of scan conversion.
- Graphic primitives in C, Point plotting, line drawing algorithms – DDA algorithms,
  Bresenham"s line algorithms, circle-generating algorithms, ellipses

Unit-II

Two-Dimensional Transformations
- Basic transformations-translation, scaling, rotation, matrix representations and homogeneous coordinates, composite transformations – scaling relative to a fixed pivot, rotation about a pivot point, general transformation equations, other transformation – reflection.

Unit-III

Windowing and Clipping Techniques
- Windowing concepts clipping algorithms, area clipping, line clipping, polygon clipping, text
  clipping, blanking, window to-viewpoint transformation, Cohen Sutherland clipping algorithm.

Unit-IV

Three Dimensional Graphics
- Three dimensional transformation, wire frame model, hidden line and hidden surface Elimination

Unit-V

Perspective and Parallel transformations, vanishing points, perspective anomalies to write the algorithm first and then based on those algorithms make them implement.

List of Practicals

Write programs for following:
1. To draw a line
2. To move a character about a line
3. To move two characters in. opposite direction.
4. To draw a circle
5. To move a character along circumference
6. To move along radius.
7. To use 2-d translation technique,
8. To use 2-d scaling technique
9. Ta use 2-d rotation technique.
10. To use 2-d reflection technique
11. Animation using corel move.

Reference Books

1. Principles of Interactive Computer Graphics by WM Newman and RF Spraull
2. Theory and problems of Computer Graphics by Roy A Plastock and Gordon Kalley. McGraw Hill Publishers, Schaum"s Outline series.
3. Interactive Computer Graphics by Harengton
4. Computer Graphics Programming Approach by Steven Harrington
5. Computer Graphics by Donald Hearn and M Pauline Baker
6. Computer Graphics for Engineers by A Rajaraman, Narosa Publishing House Pvt Ltd Daryaganj, New Delhi 110002

DICS603

Microprocessors – II

RATIONALE

The complex systems require high through put that at times is not met with 8-bit microprocessor system. So 16 bit microprocessors based system become suitable and economical they provide better facilities to personal computers and other industrial systems in variable use 16 bit microprocessor familiarization with the interfacing techniques will also achieves.

DETAILED CONTENTS

Unit-I

The microprocessor and its architecture

- Internal microprocessor architecture, real mode memory addressing "protected mode memory addressing, memory paging.

    Addressing modes

- Data addressing models, program memory addressing modes, stack, memory addressing modes

Unit-II

8086/8088 hardware specifications

- Pin puts and the pin functions, block diagram, bus buffering latching, bus firming, ready and the walf state minimum verses maximum mode.

80286 microprocessor

- Pin_out & pin function, block diagram, hardware, hardware features.

Unit-III

The 80386 and 80486 microprocessors

- Block diagrams, hardware features, special control registers, 80486 6memory management, virtual 8086 mode. The memory paging mechanism Introduction to 80486 microprocessor:
- Block diagram and hardware features, 80486 memory, System and memory management

Unit-IV

- The 'Pentium and Pentium procedures microprocessor, introduction to Pentium microprocessor, memory system and I/O s*ystem,* special Pentium register, sperscler architecture , Pentium memory management. Introduction to Pentium microprocessor

Unit-V

Bus interface:

- The ISA bus, The EISA bus and VESA local bus. The peripheral components of Pentium microprocessor

Memory Interface

- Memory devices, address decoding, 8088(8-bit) memory interface, 8086, 80286, 80386 SX(16-bit) memory interface, 80386 OX & '80486' (32-bit)' memory interface; Pentium &, Pentium pro (64-bit) memory interface

List of Practicals

1. Write programs for the following using 8086 instructions:

- To add, subtract, multiply and divide 2,16 words in the memory locations.
- To find average of n numbers
- To find maximum and minimum of three numbers
- To produced packed BCD from 2 ASCII characters
- To move a string from one location to another in memory
- To compare the strings
- To convert BCD number into HEX number using stack
- To find factorial for a number N.

Reference Books

1. Microprocessors and Interfacing Programming and applications - Douglas V Hall
2. The Intel microprocessors - Barry B. Brey
3. 8086 Programming & Architecture - Liu & Gibson. Prentice Hall of India, New Delhi
4. Microprocessors and Applications by B Ram.
5. Microprocessors and Applications by Uffenback
6. Microprocessors and Micro-controllers by BP Singh, Galgotia Publication, New Delhi

DICS604

.NET

RATIONALE

This is an upcoming technology, so the teacher should take pain in making the students conversant with this. The demonstration should be given using .NET software for describing the various features of .NET technology

DETAILED CONTENTS

Unit-I

.NET – evolution
- Need and perspective in current scenario, .net framework over view structural diagram

.NET framework Base classes
- User and program interfaces, windows forms, web forms, console applications

Unit-II

XML
- An overview of XML, use of XML, integrity of XML with databases, XML as the .NET Meta
  language

Visual Studio .NET
- Common IDE for all languages, the common language specification, all .net languages, management of multiple language, projects

Unit-III

Language changes
- Visual basic, C++, C#+, overview of C#, data types in C#, control flow in C#, C# classes

Unit-IV

Anatomy of .NET Applications:
- Assembly, module, type custom types, metadata and managed data

Unit-V
- What is new in visual basic .NET ?
- What is new in visual studio .NET ?

List of Practicals
1. Installation of .net
2. Exploring the various features of .net
3. Ability to work an start various tasks and features of .net framework
4. Able to work and develop program in Visual Basic.net
5. To explore in detail Visual Studio.net

Reference Books

1. Introducing .NET by James Conard, Patrick Rengler, Birn Eranics, Jay Elynn Wron Publications

DICS605

Visual C++

RATIONALE
Visual programming is the programming technique to make the task easy. This type of programming has become very helpful for designing widow based application. This subject will give the student in depth understanding of the function used in visual C++

DETAILED CONTENTS

Unit-I
Visual C++
- VC++ developer studio, VC++ Runtime library, VC++ MFC and template libraries, VC++ Building tool, Active X

C++ Classes
- Class creation, accessing class members, encapsulation, constructor, destructors

Unit-II
Deriving C++ Classes
- Class derivation, constructor for derived classes, creation of numbers of classes, managing classes, using class view, overloading operation, C++ template, exception handling in C++

Unit-III
Windows GUI programming with MFC library
- Creation and building the programs, source code generation, building and running program, adding message handling function, adding menu commands, adding tool bar and status bar, scrolling and splitting views

Unit-IV
Dialog Boxes
- Dialog boxes, design of dialog boxes, creating classes to manage dialog boxes, defining message handler

Unit-V
Dialog Based Application
- Creation of a simple dialog based application, multiple document interface

INSTRUCTIONAL STRATEGY

This subject is a practice based, so the emphasis may be given to practical exercises of visual C++ during the course of the study which in turn will reinforce the understanding of the subject.

Reference Books

1. Master Visual C++ by Michal J Young; BPB Publication, Delhi
2. Visual C++ by Davis Chapman, SAMS, Tech Media Publication, Delhi
3. Visual C++ Programming by Stene Holzmer; Pustak Mahal, IDG Books, Delhi

DICS606

Major Project

Major Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The students should identify themselves or accept the given project assignment at least two to three months in advance. The project work identified in collaboration with industry should be preferred. Each teacher is expected to guide the project work of 5–6 students. The project assignments may consist of:

- Installation of computer systems, peripherals and software
- Programming customer based applications
- Web page designing
- Database applications
- Networking
- Software Development
- Fabrication of components/equipment
- Fault-diagnosis and rectification of computer systems and peripherals
- Bringing improvements in the existing systems/equipment