



GLA
UNIVERSITY
MATHURA
Established vide U.P. Act 21 of 2010.

Course Curriculum

Session – 2016- 2017

Three Year Diploma Course

In

Computer Science Engineering

UNIVERSITY POLYTECHNIC

CONTENTS			
Sr. No.	Subject Code	Subject Name	Page No.
		Course Structure, Contact Hours And Credits	
		Scheme of Evaluation Grading	
1	DHE 1001	English Communication – I	
2	DHM 1001	Applied Mathematics -I	
3	DHP 1001	Applied Physics-I	
4	DHC 1001	Applied Chemistry-I	
5	DCS 1101 / DME 1001	Fundamentals of Computer / Engineering. Mechanics	
6	DME 1081	Engineering Drawing-I	
7	DME 1082	Workshop Practice	
8	DHC 1081 / DHP 1081	Applied Chemistry Lab / Applied Physics Lab.	
9	DCS 1081	Computer Lab I	
10	DME 1083 / DME 1084	Engineering Mechanics Lab. / Field Visits and Presentations 1	
11	DME 1099	General Proficiency	
12	DHE 2001	English Communication -II	
13	DHM 2001	Applied Mathematics -II	
14	DHP 2001	Applied Physics-II	
15	DHC 2001	Applied Chemistry-II	
16	DCS 1101 / DME 1001	Fundamentals of Computer / Engineering. Mechanics	
17	DME 2082	Manufacturing Process & Building Materials	
18	DME 2081	Engineering Drawing-II	
19	DHC 1081 / DHP 1081	Applied Chemistry Lab / Applied Physics Lab.	
20	DCS 2081	Computer Lab II	
21	DME 1083 / DME 1084	Engineering Mechanics Lab. / Field Visits & Presentations 1	
23	DME 2099	General Proficiency	
24	DCS 3004	Computer Hardware and Maintenance	
25	DCS 3001	Programming in 'C'	
26	DCS 3002	Operating System	
27	DCS 3003	Database Management System	
28	DCS 3005	Digital Electronics	
29	DCS 3081	Programming in 'C' Lab	
30	DCS 3082	Database Management System Lab	
31	DEC 3092	Digital Electronics Lab	
32	DCS 3083	Computer Hardware and Maintenance Lab	
33	DCS 3084	Field Visits & Presentations	
33	DCS 3099	General Proficiency	
34	DCS 4001	Data Structure Using 'C'	
35	DCS 4002	Object Oriented Programming Using 'C++'	
36	DCS 4003	Computer Graphics	
37	DCS 4004	Computer Organization	
38	DCS 4005	Management Information System	
39	DCS 4081	Data Structure Lab	
40	DCS 4082	Object Oriented Programming Lab	
41	DCS 4083	Computer Graphics Lab	
42	DCS 4084	Computer Organization Lab	
43	DCS 4085	Field Visits & Presentations-I	
44	DCS 4099	General Proficiency	
45	DCS 5001	Software Engineering	
46	DCS 5002	Computer Network	
47	DCS 5003	Internet and Web Technology	
48	DCS 5004	Java Programming	
49	DCS 5005	E- Commerce	
50	DCS 5081	Networking Lab	
51	DCS 5082	Web Technology Lab	
52	DCS 5083	Java Programming Lab	
53	DCS 5084	Minor Project Work	
54	DCS 5099	General Proficiency	
55	DCS 6001	. Net Programming	
56	DCS 6002	Multimedia	
57	DCS 6003	Information Security	
58	DHE 6001	Professional And Business Communication	
59	DCS 6021	Software Project Management	
60	DCS 6022	Data Warehousing And Data Mining	
61	DCS 6081	.Net Lab	
62	DCS 6082	Multimedia Lab	
63	DCS 6083	Major Project Work	
64	DCS 6099	General Proficiency	

GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMMON TO ALL BRANCH
SEMESTER : I SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DHE 1001	English Communication –I	3	2	0	4
2	DHM 1001	Applied Mathematics -I	3	2	0	4
3	DHP 1001	Applied Physics-I	3	0	0	3
4	DHC 1001	Applied Chemistry-I	3	0	0	3
5	DCS 1101/ DME 1001	Fundamentals of Computer/Engineering Mechanics	2	1	0	3
6	DME 1081	Engineering Drawing-I	0	0	4	2
7	DME 1082	Workshop Practice	0	1	4	3
8	DHC 1081/ DHP 1081	Applied Chemistry Lab / Applied Physics Lab	0	0	2	1
9	DCS 1081	Computer Lab I	0	0	2	1
10	DME 1083 /DME 1084	Engineering Mechanics Lab. / Field Visits and Presentations -I	0	0	2	1
11	DME 1099	General Proficiency	0	0	0	1
TOTAL			14	6	14	26

L- Lecture Period, T-Tutorial Period, P- Practical Period, D- Drawing Practice Period, Cr. Credits,

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Joint Board of Studies

GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMMON To ALL BRANCH
SEMESTER : II SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DHE 2001	English Communication -II	3	2	0	4
2	DHM 2001	Applied Mathematics -II	3	2	0	4
3	DHP 2001	Applied Physics-II	3	0	0	3
4	DHC 2001	Applied Chemistry-II	3	0	0	3
5	DCS 1101/ DME 1001	Fundamentals of Computer/Engineering Mechanics	2	1	0	3
6	DME 2082	Manufacturing Process and Building Materials	0	0	4	2
7	DME 2081	Engineering Drawing-II	0	1	4	3
8	DHC 1081/ DHP 1081	Applied Chemistry Lab / Applied Physics Lab	0	0	2	1
9	DCS 2081	Computer Lab II	0	0	2	1
10	DME 1083 / DME 1084	Engineering Mechanics Lab. / Field Visits and Presentations I	0	0	2	1
11	DME 2099	General Proficiency	0	0	0	1
TOTAL			14	6	14	26

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GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMPUTER SCIENCE ENGINEERING.
SEMESTER : III SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DCS 3001	Programming in 'C'	4	0	0	4
2	DCS 3002	Operating System	3	0	0	3
3	DCS 3003	Database Management System	3	0	0	3
4	DCS 3004	Computer Hardware and Maintenance	3	0	0	3
5	DCS 3005	Digital Electronics	3	0	0	3
6	DCS 3081	Programming in 'C' Lab	0	0	4	2
7	DCS 3082	Database Management System Lab	0	0	4	2
8	DEC 3092	Digital Electronics Lab	0	0	4	2
9	DCS 3083	Computer Hardware and Maintenance Lab	0	0	4	2
10	DCS 3084	Field Visits & Presentations	0	0	2	1
11	DCS 3099	General Proficiency	0	0	0	1
TOTAL			16	0	18	26

L- Lecture Period, T-Tutorial Period, P- Practical Period, D- Drawing Practice Period, Cr. Credits,

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GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMPUTER ENGINEERING.
SEMESTER : IV SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DCS 4001	Data Structure Using 'C'	3	1	0	4
2	DCS 4002	Object Oriented Programming Using 'C++'	3	0	0	3
3	DCS 4003	Computer Graphics	3	0	0	3
4	DCS 4004	Computer Organization	3	0	0	3
5	DCS 4005	Management Information System	3	0	0	3
6	DCS 4081	Data Structure Lab	0	0	4	2
7	DCS 4082	Object Oriented Programming Lab	0	0	4	2
8	DCS 4083	Computer Graphics Lab	0	0	4	2
9	DCS 4084	Computer Organization Lab	0	0	4	2
10	DCS 4085	Field Visits & Presentations-I	0	0	2	1
11	DCS 4099	General Proficiency	0	0	0	1
TOTAL			15	1	18	26

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GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMPUTER ENGINEERING.

SEMESTER : V SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DCS 5001	Software Engineering	3	0	0	3
2	DCS 5002	Computer Network	4	0	0	4
3	DCS 5003	Internet and Web Technology	3	0	0	3
4	DCS 5004	Java Programming	3	0	0	3
5	DCS 5005	E- Commerce	4	0	0	4
6	DCS 5081	Networking Lab	0	0	4	2
7	DCS 5082	Web Technology Lab	0	0	4	2
8	DCS 5083	Java Programming Lab	0	0	4	2
9	DCS 5084	Minor Project Work	0	0	4	2
10	DCS 5099	General Proficiency	0	0	0	1
TOTAL			17	0	16	26

L- Lecture Period, T-Tutorial Period, P- Practical Period, D- Drawing Practice Period, Cr. Credits,

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GLA UNIVERSITY POLYTECHNIC
COURSE STRUCTURE, CONTACT HOURS and CREDITS

DISCIPLINE : COMPUTER ENGINEERING.

SEMESTER : VI SEM (FULL-TIME)

Sr. No.	Subject Code	Subject Name	Periods Per Week			Cr
			L	T	P/D	
1	DCS 6001	. Net Programming	3	1	0	4
2	DCS 6002	Multimedia	3	0	0	3
3	DCS 6003	Information Security	3	0	0	3
4	DHE 6001	Professional And Business Communication	3	0	0	3
5		Elective	3	0	0	3
6	DCS 6081	.Net Lab	0	0	2	1
7	DCS 6082	Multimedia Lab	0	0	4	2
8	DCS 6083	Major Project Work	0	0	12	6
9	DCS 6099	General Proficiency	0	0	0	1
TOTAL			15	1	16	26

L- Lecture Period, T-Tutorial Period, P- Practical Period, D- Drawing Practice Period, Cr. Credits,

Elective

1. DCS 6021 : Software Project Management
2. DCS 6022 : Data Warehousing And Data Mining

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SCHEME OF EVALUATION & GRADING

The level of student's academic performance in the course unit as the aggregate of continuous evaluation, mid-term examinations & end-term examinations is reflected by letter grades on a ten points scale according to the table given below:

Aggregate Marks (Out of 100)	Letter Grade	Grade Point
≥90	A+	10
80-89	A	9
70-79	B+	8
60-69	B	7
50-59	C+	6
40-49	C	5
35-39	D	4
30-34	E	2
<30	F	0

MINIMUM ACADEMIC REQUIREMENTS:

The student must score a minimum Grade 'D' in each course to pass the course unit.

SEMESTER PERFORMANCE INDEX (SPI)/TRIMESTER PERFORMANCE INDEX (TPI)

The Semester/Trimester performance of the student is indicated as "Semester Performance Index (SPI)/ Trimester Performance Index (TPI)" at the end of every Semester/Trimester.

SPI/TPI is the weighted average of Grade Points of all letter grades secured by a student for all the course units in the Semester/Trimester. The formula for computing 'I', where 'I' is SPI or TPI as applicable, is as under:

$$I = \frac{c_1g_1 + c_2g_2 + \dots + c_kg_k}{c_1 + c_2 + \dots + c_k}$$

"c" is the credit given to the course

"g" is the grade point obtained in the course

"k" is the number of courses in the Semester/Trimester

CUMULATIVE GRADE POINT INDEX (CPI)

The CPI is used to describe overall performance of a student in a programme. It is weighted average of grade points obtained by him/her in all Semesters/Trimesters.

$$CPI = \frac{\sum_{i=1}^n C_i I_i}{\sum_{i=1}^n C_i}$$

"C" is the total credit of the Semester/Trimester

"n" is the semester for which the CPI is calculated

CONVERSION OF CPI TO PERCENTAGE OF MARKS

Percentage of marks = [CPI - 0.75] x 10

CPI

Greater than or equal to 8.25

Less than 8.25 and greater than or equal to 6.75

Less than 6.75 and greater than or equal to 5.75

Less than 5.75 and greater than or equal to 5.25

EQUIVALENT DIVISION

First Division with honours*

First Division

Second Division for degree courses

Second Division for diploma courses

*First division with honours will be awarded only if the candidate clears all the subjects in single attempt in normal duration of the programme and that too in regular semesters/trimesters.

AHE 1003: ENGLISH COMMUNICATION - I

Credits: 04

Semester I

L-T-P : 3-2-0

Module No.	Contents	Teaching Hours
I	<p>Grammar and Usage: Modals Voice Direct and Indirect Narration Question Tags Transformation of Sentences Study of Text: "Science and Human life" by J.B.S. Haldane (From the prescribed text)</p>	12
II	<p>Writing skills: Writing Paragraphs Picture Composition Letter Writing: Personal Letters Study of Text: "The Eyes Are Not Here" by Ruskin Bond (From the prescribed text) "The Rocking-Horse Winner" by D.H. Lawrence (From the prescribed text)</p>	12
III	<p>Reading Skills: Comprehension passages from the prescribed text. Vocabulary: Words often confused, Synonyms, Antonyms. Study of Text: "The Lament" by Anton P. Chekhov (From the prescribed text) "The Fly" by Katherine Mansfield (From the prescribed text) Developing Oral Communication Skills</p> <ul style="list-style-type: none"> ● Greeting, Starting a Conversation ● Introducing Oneself ● Introducing Others ● Leave Taking ● Thanks Giving, Wishing Well ● Talking about Self ● Talking about Likes and Dislikes <p>(Note : The above content is for oral practice. It should not be included in theory examination.)</p>	12

BOOKS PRESCRIBED:

- *An Anthology of English Short Stories*, Ed. R.P.Singh, Oxford University Press, New Delhi.
- *Current English Grammar & Usage with Composition* by R.P. Sinha, Oxford University Press, New Delhi.

BOOKS RECOMMENDED FOR STUDY:

- *Communicating Effectively in English, Book-I* by RevathiSrinivas, Abhishek Publications, Chandigarh.
- *High School English Grammar and Composition* by Wren & Martin, S. Chand & Company Ltd., Delhi.
- *Communication Techniques and Skills* by R.K.Chadha, DhanpatRai Publications, New Delhi.
- *Intermediate English Grammar* by Raymond, Murphy, Cambridge University Press, New Delhi.
- *Living English Structure* by W. Allen, Pearson Education, New Delhi.
- *Oxford English Hindi Dictionary* by R.N. Sahai&S.Kumar, Oxford University Press, New Delhi.

AHM 1004 : APPLIED MATHEMATICS - I

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

Credits: 04

Semester I

L-T-P : 3-2-0

Module No.	Contents	Teaching Hours (Approx.)
I	<p>Algebra: Determinants and Matrices: expansion of determinants (upto III order) by expansion method, solution of equations(upto three unknowns) by Cramer's rule, Definition of matrix, addition, subtraction, multiplication of matrices (upto III order), transpose of matrix, minor and cofactor, Inverse of a matrix by adjoint method (upto II Order). Partial Fractions(Linear factors, repeated linear factors, non reducible quadratic factors excluding repeated factors), concept of A.P., G.P., permutation and combination (nPr, nCr) Binomial theorem(without proof) for positive integral index (expansion and general forms), Binomial theorem for any index (expansion without proof), first and second binomial approximation with application to engineering problems</p>	12
II	<p>Trigonometry: T – ratios of allied angles (without proof), sum , difference formulae and their applications(without proof), product formulae (transformation of product to sum, difference and vice – versa), T – ratios of multiple angles, sub multiple angles ($2A$, $3A$, $A/2$), Properties and solution of the triangle, inverse trigonometrical functions (principal value only). Definition of complex numbers, real and imaginary parts of complex number, polar and cartesian form and their inter- conversion, conjugate, modulus and argument of a complex number, addition, subtraction, multiplication and division of a complex number. Demoivre's theorem, Euler's theorem of circular functions, hyperbolic functions</p>	12
III	<p>Coordinate Geometry: Equation of straight line in standard forms (without proof), intersection of two straight lines, angle between two lines, perpendicular distance formula (without proof). General equation of circle and its characteristics, to find the equation of the circle given: centre and radius or three points lying on it or coordinates of end points of a diameter Equation of conics(ellipse, parabola and hyperbola), simple problems related to engineering (standard forms only)</p>	12

Reference Books/ Text Books / Cases:

- * Gupta P.(2012), Comprehensive Mathematics XII, Laxmi Publications, Delhi
- * Grewal B. S. Elementary Engineering Mathematics, Khanna Publishers, New Delhi
- * Sharma R.D., Applied Mathematics, Dhanpat Rai Publications, Delhi

AHP 1002: APPLIED PHYSICS – I

Credits: 03

Semester I

L-T-P: 3-0-0

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

Module No.	Content	Teaching Hours
I	Physical quantities, fundamental and derived units, systems of units (CGS, MKS and SI units), Dimensions and dimensional formulae of physical quantities, Checking the correctness of physical relations and derivation of relations between various physical quantities, Error in measurement, types of errors, significant figures, Scalar and Vector quantities, representation of vectors, types of vectors, Addition, subtraction, multiplication of vectors, scalar and vector products, Force: Newton's laws of motion, linear momentum and its conservation laws, impulse, simple numerical problems, Friction, Types of friction and its application, equilibrium of forces, Lami's theorem, Projectile, horizontal and oblique projections and equation of trajectory, Relation between linear and angular variables (velocity and acceleration), Circular motion, Angular displacement, angular velocity and angular acceleration Centripetal force (derivation) and centrifugal force with application such as banking of roads and bending of cyclists	12
II	Concept of Translatory and rotatory motion with examples, Definitions of Torque, angular momentum and their relationship, Law's of Conservation of angular momentum (qualitative) and its examples, Moment of inertia and its physical significance, rotational kinetic energy, inertia of rod, rod, disc, ring and sphere (Formulae only), Planetary motion: Newton's law of gravitation, Kepler's law of planetary motion (Qualitative), escape velocity, Work (definition), work done against friction on horizontal and inclined plane, Work done by a moving object on horizontal and inclined plane (incorporating frictional forces), Power (definition), Calculation of power in simple cases, Energy (definition), Kinetic energy and Potential energy with their derivations, Principle of conservation of mechanical energy (for freely falling bodies), transformation of energy from one form to another, Elasticity (definition), stress and strain, different types of modulus of elasticity (Formulae), Hooke's law with its applications, Pressure (definition), atmospheric pressure. gauge pressure, absolute pressure, Surface tension (concept), angle of contact, measurement of surface tension by capillary tube method, applications of surface tension.	12
III	Difference between heat and temperature, Principles of measurement of temperature and different scales of temperature and their relationship, Types of thermometers (Concept only), Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them (Concept and only formulae), Modes of transfer of heat (Conduction, convection and radiation with examples), Thermal conductivity: Co-efficient of thermal conductivity, Laws of Black body radiations: Stephens law, Kirchoff's law, Wien's Law (Concept and related formulae), Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency in S.H.M. Equation of simple harmonic progressive wave, Wave motion: Transverse and longitudinal wave motion with examples, Velocity of sound waves, frequency and wave length of a wave (relationship $v = \nu\lambda$) and their applications, superposition of wave and application to interference, beats and stationary waves.	12

Reference Books:

- Applied Physics Vol. I TTTI Publications, Tata McGraw Hill, New Delhi
- Concepts in Physics by HC Verma, Vol. I , Bharti Bhawan Ltd. New Delhi
- Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
- Applied Physics by Jasmer Kaur and Bhupinder Singh, Lords Publications, Jalandhar
- Engineering Physics by Vanchna Singh and Sheetal Kumar, Cengage Learning India Pvt. Ltd. Patparganj, Delhi

Text Books:

- Applied Physics Vol.I by T.R.Narula and Suman Chaudhary, North Publications, Jalandhar
- Nutan Physics by Kumar & Mittal

AHC 1002 : APPLIED CHEMISTRY-I

Credits: 2

Semester-I

L-T-P : 2-0-0

Module No.	Contents	Teaching Hours
I	<p>General Chemistry: Symbols, formula of simple inorganic compounds, valency, chemical equations, Atomic weight, Equivalent weight, Molecular weight, Isotopes, Isobars, Surface tension, Viscosity, Specific gravity.</p> <p>Structure of atom: Fundamental particles viz. electron, proton, neutron. Rutherford and Bohr's model of atom, Bohr Burry Scheme, Aufbau principle and Hund's Rule, Electronic configuration of elements (up to atomic number 30), Quantum numbers.</p>	8
II	<p>Periodic properties of elements: Modern periodic law, Long form of periodic table and its merits and demerits. Atomic radii, ionic radii, Ionization potential, Electro negativity and Electron affinity.</p> <p>Electrochemistry: Electrolytes and non electrolytes, Faraday's Law of electrolysis, Arrhenius acid - base concept, pH (numericals of strong acid and strong base) & buffer solution (definition and types). Common ion effect and solubility product. Oxidation number, Oxidation and reduction including electronic concept. Dry cell.</p>	8
III	<p>Chemical bonding: Types of chemical bonding (ionic, covalent and co-ordinate bond). Hydrogen bonding, Hybridisation (sp³, sp², sp).</p> <p>Solutions: Homogeneous and heterogeneous solutions. Normality, Molarity, Molality, Mole concept, colligative properties, osmotic pressure and its measurement by Berkley and Hartley method.</p> <p>Radioactivity: General idea of radioactivity, emission of alpha, beta, gamma rays and their properties. Fajan's group displacement law, half life, average life, nuclear fission and nuclear fusion.</p>	8

DCS 1101: FUNDAMENTALS OF COMPUTER

Credits: 02

Semester I

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
I	<p>Fundamentals of Computer concepts Introduction to computer, its application in various fields, Primary and secondary memory, units of memory. Computer hardware and software, Introduction to Operating Systems, Difference between DOS and Windows. Types of Processors, Benchmarking (estimation of cost of Hardware)</p> <p>Introduction to Number System Binary, Octal, Hexadecimal, etc .Conversions: Binary to Octal, Octal to Binary, Binary to Hexadecimal, Hexadecimal to Binary, octal to Hexadecimal, Hexadecimal to Octal. Introduction to Logic Gates, Truth tables.</p>	12
II	<p>Introduction to Computer Networks Network Goals, Devices, types, Topologies, Addressing, OSI Model (seven layer model), Internet, WWW, search engine</p> <p>Introduction to 'C' Programming Introduction to Programming, Flowcharts(Definition, Importance, symbols in flowchart), Algorithm (Definition, Importance, steps in developing an algorithm), Steps to develop a program</p>	12
III	<p>'C' Programming Structure of a program, where C stands, C character set, tokens, constants, variables, C operators, C expressions, data types, basic programs, decision making programs (if, if-else, if-else ladder), conditional statement, loop based programs(for, while, do-while)</p>	12

Text Books

1. Basics of Information Technology by Priti Srivastava, North Publication
2. Let us 'C', Yashwant Kanetkar, Exploring – BPB Publications, New Delhi.

Reference Books:

1. Fundamentals of Computer by E Balagurusamy, Tata McGraw Hill Education Pvt. Ltd, New Delhi
2. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi
3. Internet for Every One by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi

DME 1081: ENGINEERING DRAWING – I

Credits: 03

Semester I

L-T-P: 0-1-4

- Note: 1. First angle projection is to be followed
2. Instruction relevant to various drawings may be given along with appropriate demonstration, before assigning drawing practice to the students

Module No.	Content	Teaching Hours
I	<p>Drawing Office Practice, Lines and Lettering (2 Sheets)</p> <p>1.1 Definition of drawing, classification of drawing</p> <p>1.2 Drawing instruments such as mini drafter, drawing board, drawing sheet, drawing pins, pencils, eraser, sandpaper, sharpener, cello-tape etc.</p> <p>1.3 Sizes and layout of standard drawing sheets and drawing boards</p> <p>1.4 Different types of lines in engineering drawing as per BIS specifications</p> <p>1.5 Definition and classification of letterings, free hand lettering (alphabets and numerals) in different standard series of 2.5, 3,5,7,10 and 15 mm heights. Single stroke vertical and inclined lettering at 75° (alphabets and numerals) lowercase and uppercase in the ratio of 7:4.</p>	04
II	<p>Dimensioning (2 Sheets)</p> <p>2.1 Necessity of dimensioning, Types of dimensioning (chain, parallel and progressive dimensioning, size and location dimensioning) Methods of placing dimensioning (Aligned and unidirectional system), use of leader lines. General principles of dimensioning.</p> <p>2.2 Dimensioning of overall sizes, circles, thread holes, chamfered surfaces, angles, tapered surface holes equally spaced on PCD, counter sunk hole counter bored holes, cylindrical parts, narrow space and gaps, radii, curves and arches.</p>	04
III	<p>Simple Geometrical Constructions used in Engineering Practice (2 Sheets)</p> <p>3.1 Construction of regular polygons (triangle, square, pentagon, hexagon) and circles</p> <p>3.2 Ellipses (concentric circle method and Intersecting Arcs method)</p> <p>3.3 Parabola (rectangle and tangent method), cycloid</p> <p>3.4 Freehand sketching of above geometrical shapes</p>	04
IV	<p>Scale (2 sheets)</p> <p>3.5 4.1 Scale - their need and importance, Definition of representative fraction (R.F), find RF of given scale</p> <p>3.6 4.2 Construction of plain and diagonal scales</p>	04
V	<p>Principle of Projections (10 sheets)</p> <p>3.7 5.1 Principle of orthographic projection and introduction to first angle projection and third angle projection</p> <p>3.8 Projection of points situated in different quadrants (1 Sheet)</p> <p>3.9 Projection of lines, Lines inclined to one plane and parallel to the other and vice versa (1st & 3rd quadrants) (1 Sheet)</p>	20

	<p>3.10 Projection of Planes: Planes perpendicular and parallel to either of the planes; planes perpendicular to one plane and parallel to the other or vice versa (1st & 3rd quadrants) (1 Sheet)</p> <p>3.11 5.5 Drawing 3 orthographic views of given objects (6 sheets, at least one sheet in 3rd Angle Projection)</p> <p>3.12 5.6 Identification of surfaces on drawn orthographic views from isometric object drawn (1Sheet)</p>	
VI	<p>Sectional Views (2 sheets)</p> <p>6.1 Need for sectional views –Drawing of different conventions for materials in sections, conventional breaks for shafts, pipes, rectangular, square, angle, channel and rolled sections</p>	04
VII	<p>Isometric Views (2 sheets)</p> <p>7.1 Fundamentals of isometric projections (theoretical instructions) and isometric scales</p> <p>7.2 Isometric views of combination of regular solids like cylinder, cone, cube, prism and pyramid</p>	04
VIII	<p>Development of Surfaces (2 sheets)</p> <p>8.1 Parallel line method (Prism and cylinder)</p> <p>8.2 Radial line method (Pyramid and Cone)</p> <p>Note: Minimum 20 drawing sheets will be prepared by the students.</p>	04

RECOMMENDED BOOKS

1. Engineering Drawing by KK Dhiman, Ishan Publications, Ambala, Haryana
2. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House, Anand, Gujrat
3. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi
3. Engineering Drawing by PS Gill published by SK Kataria and sons, Delhi
4. Engineering Drawing by RB Gupta published by Satya Prakashan, New Delhi
5. Engineering Drawing by NS Kumar published by King India Publication, New Delhi

References:

1. Ghosh and Malik, "Manufacturing science" East West Pvt. Ltd.
2. Boothroyd, "Fundamental of Metal Cutting and Machine tools"
3. Sharma, P.C., "Manufacturing Technology (Manufacturing Processes)" S. Chand
4. Jain V.K., "Advance machining Process"

DME 1082: WORKSHOP PRACTICE

Credits: 03

Semester I

L-T-P: 1-0-4

The following shops are included in the syllabus:

1. Carpentry Shop-1
2. Fitting Shop
3. Welding Shop-I
4. Electric Shop –I
5. Smithy Shop or Electronic Shop-I
6. Sheet Metal Shop

Note:

1. The branches e.g. Civil Engineering, Electrical Engineering, Mechanical Engineering, Production Engineering and Automobile Engineering will do **Smithy Shop** instead of Electronic Shop- I.
2. The branches e.g. Electronics and Communication Engineering, Electronics and Instrumentation, Instrumentation and Control, Computer Engineering, Medical Electronics, Textile Technology, Textile Processing, Knitting Technology, Chemical Engineering, Ceramic Engineering and Food Technology will do **Electronic Shop-I** instead of Smithy Shop.

Module No.	Content	Teaching Hours
I	<p>Carpentry Shop - I</p> <p>1.1 Introduction to various types of wood such as Deodar, Kail, Partal, Teak, Mango, Sheesham, etc. (Demonstration and their identification).</p> <p>1.2 Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed. Job I Marking, sawing, planning and chiseling & their practice (size should be mentioned)</p> <p>1.3 Introduction to various types of wooden joints, their relative advantages and uses. Job II Preparation of half lap joint Job III Preparation of Mortise and Tenon Joint</p> <p>1.4 Demonstration of various methods of painting wooden items. Job IV Preparation of wooden surface before painting including primer coating Job V Painting Practice by brush/spray</p> <p>1.5 Safety precautions in carpentry shop</p>	08
II	<p>Fitting Shop</p> <p>2.1 Introduction to fitting shop tools, common materials used in fitting shop, Identification of materials. Such as Steel, Brass, Copper, Aluminium etc. Identification of various sections of steel such as Flat, Angle, Tee, Channel, Bar Girder, Square, Z-Section, etc.</p>	08

	<p>2.2 Description and demonstration of various types of work benches, holding devices and files. Precautions while filing.</p> <p>2.3 Description and demonstration of simple operation of hack-sawing, demonstration and description of various types of blades and their specifications, uses and method of fitting the blade. Job I Marking of job, use of marking tools and measuring instruments. Job II Filing a dimensioned rectangular or square piece of an accuracy of $\pm 0.5\text{mm}$ Job III Filing practice (production of flat surfaces). Checking by straight edge. Job IV Making a cutout from a square piece of MS Flat using hand hacksaw.</p> <p>2.4 Care and maintenance of measuring tools like calipers, steel rule, try square, vernier calipers, micrometer, height gauge, combination set. Handling of measuring instruments, checking of zero error, finding of least count (all gauges including dial gauge).</p>	
<p style="text-align: center;">III</p>	<p>Welding Shop - I</p> <p>3.1 (a) Introduction to welding and its importance in engineering practice; types of welding; common materials that can be welded, introduction to welding equipment e.g. a.c. welding set, d.c. rectifier, electrode holder, electrodes and their specifications, welding screens and other welding related equipment, accessories and gloves. (b) Safety precautions during welding (c) Hazards of welding and its remedies</p> <p>3.2 Electric arc welding, (a.c. and d.c.) precautions while using electric arc welding, Practice in setting current and voltage for striking proper arc. Earthing of welding machine. Job I Practice of striking arc bending and tacking while using electric arc welding set. Job II Welding practice on electric arc welding for making uniform and straight weld beads</p> <p>3.3 Various types of joints and end preparation. Job III Preparation of butt joint by electric arc welding. Job IV Preparation of lap joint by electric arc welding. Job V Preparation of corner joint by using electric arc welding. Job VI Preparation of Tee joint by electric arc welding.</p>	<p style="text-align: center;">08</p>
<p style="text-align: center;">IV</p>	<p>Electric Shop - I</p> <p>4.1 Study, demonstration and identification of common electrical materials such as wires, cables, switches, fuses, ceiling roses, PVC Conduits, PVC Channels and allied items, tools along with electrical instruments such as voltmeter, ammeter and multimeter.</p> <p>4.2 Study of electrical safety measures and demonstration about use of protective devices such as fuses, MCBs, ELCBs and relays including earthing. Job I Identification of phase, neutral and earth of</p>	<p style="text-align: center;">08</p>

	<p>domestic appliances and their connection to two pin/three pin plugs.</p> <p>Job II Preparation of a house wiring circuit on wooden board using fuse, switches, socket, holder, ceiling rose etc. in PVC conduit and PVC casing and capping wiring system.</p> <p>4.3 Study of common electrical appliances such as electric iron, electric kettle, ceiling fan, table fan, electric mixer, electric Geyser, gas geyser, desert cooler, refrigerator, water purifier</p> <p>4.4 Introduction to lead-acid battery, identification of parts and its working.</p> <p>Job III Installation of inverter with battery and to connect two or more batteries in series and in parallel (knowledge of a.c. and d.c.)</p> <p>Job IV Charging of a battery and testing it with the help of hydrometer and cell tester</p>	
<p>V</p>	<p>Smithy Shop</p> <p>5.1 Demonstration and detailed explanation of tools and equipment used. Forging operations in smithy shop. Safety measures to be observed in the smithy shop.</p> <p>5.2 Demonstration and description of bending operation, upsetting operation, description and specification of anvils, swage blocks, hammers etc.</p> <p>5.3 Demonstration and description of tongs, fullers, swages etc.</p> <p>Job I To forge a L-hook.</p> <p>Job II To prepare a job involving upsetting process</p> <p>Job III To forge a chisel</p> <p>Job IV To prepare a cube from a M.S. round by forging method.</p> <p style="text-align: center;">OR</p> <p>Electronic Shop - I</p> <p>5.1 Identification and familiarization with the following tools used in electronic shop such as Tweezers, Screw drivers (different sizes), Insulated Pliers, Cutter, Sniper, Philips Screw Driver (Star Screw Driver), L-Keys, Soldering Iron, soldering wire, flux . Their demonstration and uses.</p> <p>5.2 Identification and familiarization with Multimeter (analog and digital)</p> <p>Job I Practice in the use of above mentioned tools and instruments. For this a small experimental set up may be done</p> <p>5.3 Various types of protective devices such as : wire fuse, cartridge fuse etc. ,</p> <p>5.4 Identification and familiarization with ear phone speaker connector, telephone jacks and similar male and female connectors (audio, video)</p> <p>5.5 Safety precautions to be observed in the electronic shop</p> <p>5.6 Identification and familiarization with soldering and desoldering practice</p> <p>5.7 Introduction to thimbles and crimping tools</p> <p>NOTE: Demonstration boards for the electronics components such</p>	<p>08</p>

	<p>as resistors, capacitors, diodes, transistors, FETs, IFT Coils, ICs should be made.</p> <p>Job II Cut, strip, join an insulated wire with the help of soldering iron (repeat with different types of wires)</p> <p>Job III Cut, strip, connect/solder/crimp different kinds of wires/ cables (including co-axial and shielded cable) to different types of power/general purpose/audio video/telephone plugs, sockets, jacks, terminals, binding posts, terminal strips, connectors. The tasks should include making complete recording/ playback/ antenna/ speaker leads for common electronic products such as Radio, TV, CD players, VCD/DVD players, cassette recorder and players, Hi-Fi equipment, hand- set, microphone.</p>	
VI	<p>Sheet Metal Shop</p> <p>Introduction to sheet metal shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications.</p> <p>6.1 Introduction and demonstration of hand tools used in sheet metal shop.</p> <p>6.2 Introduction and demonstration of various machines and equipment used in sheet metal shop e.g. shearing machine, bar folder, burring machine, power press, sheet bending machine.</p> <p>6.3 Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet, galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheets etc.</p> <p>6.4 Study of various types of rivets, steel screw etc.</p> <p>Job I Shearing practice on a sheet using hand shears.</p> <p>a) Practice on making single riveted lap joint/double riveted lap joint.</p> <p>b) Practice on making single cover plate chain type, seam joint and riveted butt joint</p>	08

References:

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Chaoudhary; Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III; India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy, KL Narayana et al; MacMillan India Ltd. New Delhi
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd., New Delhi
5. Workshop Technology by B.S. Raghuwansh;, Dhanpat Rai and Co., New Delhi
6. Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi.

AHC 1082 : CHEMISTRY LAB

Semester-I

Credits: 03

Semester I

L-T-P: 0-0-2

LIST OF EXPERIMENTS

Module No.	Contents	Teaching Hours
I	<ol style="list-style-type: none"> 1. Instructions for working in chemistry laboratory. 2. Instructions for handling of various apparatus/instruments used in laboratory. 3. Preparation of standard solution of oxalic acid or sodium hydroxide. 4. Analysis of the following acidic radicals* CO₃²⁻, NO₂⁻, S²⁻, SO₄²⁻, NO₃⁻, CH₃COO⁻, Cl⁻, Br⁻ and I⁻ 5. Analysis of the following basic radicals* NH₄⁺, Pb²⁺, Cu²⁺, Cd²⁺, As³⁺, Sb³⁺, Sn²⁺, Al³⁺, Fe³⁺, Cr³⁺, Zn²⁺, Mn²⁺, Ni²⁺, Co²⁺, Ba²⁺, Sr²⁺, Ca²⁺ and Mg²⁺ 6. Identification of functional group -CHO, -OH (phenolic and alcoholic), -COOH in a given organic compound. 7. Determination of the solubility of a solid at room temperature. 8. Determination of acid value of oil. 9. Determination of viscosity of given liquid. 10. Determination of surface tension of the given liquid by using stalagmometer. 	24

***NOTE:-** In practical examination mixture containing two acidic and two basic radicals will be given

AHP 1082: APPLIED PHYSICS LAB

Credits: 01

Semester I

L-T-P: 0-0-2

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
I	<ol style="list-style-type: none"> 1. To find the diameter of wire using a screw gauge 2. To measure the thickness of a given sheet using a screw gauge. 3. To find the volume of solid cylinder using a vernier calipers. 4. To find the volume of hollow cylinder using a vernier calipers. 5. To determine the radius of curvature of a spherical surface using spherometer. 6. To verify parallelogram law of forces 7. Determination of 'g' using simple pendulum. 8. To determine force Constant of spring using Hooke's Law 9. To find the coefficient of friction between a block and a horizontal surface. 10. To determine the coefficient of viscosity of a given liquid by measuring the terminal velocity of a given spherical body in it. 11. Determination of velocity of sound by resonance tube. 12. To determine the young's modulus by searles apparatus. 13. To determine moment of inertia of solid bodies 	24

DCS 1081: COMPUTER LAB I

Credits: 01

Semester I

L-T-P: 0-0-2

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
I	1. Identify and list functions of various components and peripherals of given computer. Features of Windows as an operating system. Installation of Operating System.	2
II	2. Word Processing (MS Office/Open Office) <ul style="list-style-type: none"> a) File Management: <ul style="list-style-type: none"> Opening, creating and saving a document, locating files, copying contents in some different file(s) b) Editing a document: <ul style="list-style-type: none"> ▪ Entering text, cut, copy, paste using toolbars ▪ Use of spell check ▪ PDF file and its conversion in different file formats (MS Word/Excel etc.) ▪ Scanning, editing and printing of a document c) Formatting a document: <ul style="list-style-type: none"> ▪ Using different fonts, changing font size and colour, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods ▪ Aligning of text in a document, justification of document ,Inserting bullets and numbering ▪ Formatting paragraph, inserting page breaks and column breaks, line spacing ▪ Use of headers, footers, inserting footnote, end note, use of comments ▪ Inserting date, time, special symbols, importing graphic images, drawing tools d) Tables and Borders: <ul style="list-style-type: none"> ▪ Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting a row in a table ▪ How to change docx file to doc file ▪ Print preview, zoom, page set up, printing options Using Find, Replace options 	6
	3. Power Point Presentation (MS Office/Open Office) <p style="margin-left: 20px;">Introduction to PowerPoint</p> <ul style="list-style-type: none"> ▪ How to start PowerPoint ▪ Working environment: concept of toolbars, slide layout, templates etc. ▪ Opening a new/existing presentation ▪ Different views for viewing slides in a presentation: normal, slide sorter etc. 	6

	<p>Addition, deletion and saving of slides</p> <p>Insertion of multimedia elements</p> <ul style="list-style-type: none">▪ Adding text boxes, importing pictures, tables and charts etc. <p>Formatting slides</p> <ul style="list-style-type: none">▪ Text formatting, changing slide layout, changing slide colour scheme▪ Changing background, Applying design template <p>How to view the slide show?</p> <ul style="list-style-type: none">▪ Viewing the presentation using slide navigator, Slide transition▪ Animation effects etc.	
	4. Basic 'C' Programs covering decision control statements and looping	10

AHE 2002: ENGLISH COMMUNICATION -II

Credits: 04

Semester II

L-T-P : 3-2-0

Module No.	Contents	Teaching Hours (Approx.)
I	<p>Grammar and Usage: Parts of Speech Sentence Structure: Subject; Verb and Object Articles: 'a', 'an' and 'the' Tenses</p> <p>Study of Text: "The Renunciation" by Rabindranath Tagore (From the prescribed text) "The Gift of the Magi" by O' Henry (From the prescribed text)</p>	14
II	<p>Reading skills: Unseen comprehension Vocabulary: Phrasal Verbs, One-Word Substitutions Study of Text: "The Heritage of India" by A.L. Basham (From the prescribed text) "Water" by C.V. Raman (From the prescribed text)</p>	10
III	<p>Writing skills: Notice writing Story writing using given clues Official communication: Applications, Resume', Complaint letters, E-mail, Study of Text: "A Bookish Topic" by R.K. Narayan (From the prescribed text) Developing Oral communication skills 2.1 Offers/Responding to Offers 2.2 Requests/Responding to Requests 2.3 Congratulating 2.4 Expressing Sympathy and Condolences 2.5 Expressing Disappointments 2.6 Apologizing, Forgiving 2.7 Complaining 2.8 Warning 2.9 Asking for and Giving Information 2.10 Giving Instructions 2.11 Getting and Giving Permission 2.12 Asking For and Giving Opinions (Note: The above content is for oral practice. It should not be included in theory examination)</p>	12

BOOKS PRESCRIBED:

- *An Anthology of English Essays*, Ed. R.P.Singh, Oxford University Press, New Delhi.
- *Current English Grammar & Usage with Composition*, R.P. Sinha, Oxford University Press, NewDelhi.

BOOKS RECOMMENDED FOR STUDY:

- *Communicating Effectively in English, Book-I* by RevathiSrinivas, Abhishek Publications, Chandigarh.
- *High School English Grammar and Composition* by Wren & Martin, S. Chand & Company Ltd., Delhi.
- *Communication Techniques and Skills* by R.K.Chadha, DhanpatRai Publications, New Delhi.
- *Intermediate English Grammar* by Raymond, Murphy, Cambridge University Press, New Delhi.
- *Living English Structure* by W. Allen, Pearson Education, New Delhi.
- *Oxford English Hindi Dictionary* by R.N. Sahai&S.Kumar, Oxford University Press, New Delhi.

AHP 2001: PHYSICS – II

Credits: 03

Semester II

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
Unit-I	Coulombs law, electric potential and electric potential due to point charge, electric potential difference, Electric field, electric field intensity, electric lines of force, electric flux Gauss's Law, Applications of Gauss law in finding electric field of point charge, straight charged conductor, plane charged sheet and between two plane parallel charged sheets using Gauss law, Capacitance types of capacitors, capacitance of parallel plate capacitor, series and parallel combination of capacitors, Dielectric and its effect on capacitance, Concept of electricity, current and its units, direct and alternating current, internal resistance of a cell, expression for current from a cell, potentiometer and its applications in the comparison of e.m.f. of two cells. Measurement of internal resistance of a cell. Series and parallel combination of cells, Ohm's law and its applications, concept of resistance, conductance, specific resistance, effect of temperature on resistance, co-efficient of resistance, series and parallel combination of resistors, Kirchoff's laws, Wheatstone bridge principle and its applications (Meter bridge, post office Box), Heating effect of current and concept of electric power, energy and their units.	12
Unit-II	Alternating current phase and phase difference, Behaviour of resistance, capacitance and inductance in A.C. Circuits, A.C. Circuits containing R-L, R-C & L-R-C in series, Power in A.C. circuits and power factor, Magnetic field and its units, magnetic intensity, magnetic lines of force, magnetic flux, Right hand thumb rule, magnetic lines of force due to straight conductor, circular coil and solenoid, Force on a charge, moving in a uniform magnetic field (Lorentz force). Force on a current carrying straight conductor. Torque on a current carrying rectangular coil, Moving coil galvanometer conductor, its principle, construction and working, conversion of a galvanometer into ammeter and voltmeter, Electromagnetic induction, Faradays Laws, Lenz's Law, Ampere's circuital law.	12
Unit-III	Formation of energy bands, insulators, intrinsic and extrinsic semiconductors, p-n junction diode and its characteristics (in forward and reverse bias), Diode as rectifier – half wave and full wave rectifier, pnp and npn-transistors and their uses in electronic circuits, Fibre optics: introduction to optical fiber materials, types, light propagation and applications in communication, nanotechnology: Concept of manipulating matter on an atomic and molecular scale, new materials with dimensions on the nano or molecular scale, applications.	12

Reference Books:

- Applied Physics, Vol. II, TTTI Publications, Tata McGraw Hill, Delhi
- Concepts in Physics by HC Verma, Vol. II, Bharti Bhawan Ltd. New Delhi
- A Text Book of Optics, Subramanian and Brij Lal, S Chand & Co., New Delhi
- Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
- Basic Electronics and Linear Circuits by NN Bhargava et al Tata Mc Graw Hill Publishers, New Delhi
- Principles of Electronics by SK Sahdev, Dhanpat Rai and Co, New Delhi
- Engineering Physics by Vanchna Singh and Sheetal Kumar, Cengage Learning India Pvt. Ltd. Patparganj, Delhi

TEXT BOOKS:

- Applied Physics Vol.II by T.R.Narula and Suman Chaudhary, North Publications, Jalandhar
- Nutan Physics by Kumar & Mittal

AHC 2001: APPLIED CHEMISTRY-II

Credits: 2

Semester-II

L-T-P : 2-0-0

Module No.	Contents	Teaching Hours
I	<p>Water treatment: Hardness of water, types of hardness, units of hardness. Boiler feed water. Softening of hard water by Calgon process and reverse osmosis method.</p> <p>Fuel: Definition, classification, calorific value (HCV & LCV). Petroleum and its distillation products, knocking, antiknock compounds, octane number and cetane number. Biogas.</p> <p>Lubricants: Definition, classification, properties of lubricants, flash point and fire point, saponification value, acid value, oiliness, emulsification, cloud & pour point and its applications</p>	8
II	<p>Organic chemistry: Classification of organic compounds on the basis of functional groups. IUPAC nomenclature of simple organic compounds containing one functional group only, homolytic fission, heterolytic fission, purification of organic compounds by distillation, fractional distillation, steam distillation, vacuum distillation and thin layer chromatography (TLC).</p> <p>Glass and cement: General introduction to glass and cement. Manufacturing process of glass and cement.</p>	8
III	<p>Polymers: Definition, classification, preparation and uses of polyethene, polystyrene, PVC, Teflon, Nylon66, Natural rubber, vulcanization of rubber.</p> <p>Corrosion: Introduction, Types of corrosion, wet theory of corrosion and prevention of corrosion.</p> <p>Miscellaneous materials: Paints and varnishes- Definition, classification and Application. Soap and detergents- Definition, classification and uses.</p>	8

DME 1001: APPLIED MECHANICS

Credits: 3

Semester-II

L-T-P : 2-1-0

Module No.	Contents	Teaching Hours
I	<p>1. Introduction 1.1 Concept of mechanics and applied mechanics. Importance and necessity of applied mechanics giving suitable examples of bodies at rest and in motion. 1.2 Concept of rigid body, scalar quantity and vector quantity.</p> <p>2. Force System & various laws of Mechanics 2.1 Force systems: coplanar and non coplanar force systems, coplanar concurrent and non concurrent force systems. 2.2 Principle of transmissibility of forces. 2.3 Composition and resolution of coplanar forces. 2.4 Law of triangle, law of parallelogram and law of polygon of forces. 2.5 Free body diagram, equilibrium and equilibrant forces. 2.6 Lami's theorem.</p>	8
II	<p>2. Moment Couple and Torque 2.1 Concept of moment, couple and torque. 2.2 Application of moment to simple mechanism. 2.3 Calculation of resultant of coplanar forces using moment of force method. 2.4 General condition of equilibrium of bodies under coplanar forces and moments.</p> <p>3. Laws of Motion 3.1 Concept of momentum. 3.2 Newton's laws of motion, their application. 3.3 Derivation of force equation from second law of motion. 3.4 Numerical problems on second law of motion. 3.5 Newton's third law of motion and numerical problems based on it.</p>	08
III	<p>4. Introduction of Friction and Centre of Gravity 4.1 Concept of friction and types of friction. 4.2 Limiting friction and sliding friction 4.3 Laws of static friction and coefficient of friction. 4.4 Equilibrium of bodies lying on a rough horizontal plane under external forces. 4.5 Equilibrium of bodies lying on a rough inclined plane under external forces. 4.6 Concept of gravity and gravitational force. 4.7 Concept of centroid and centre of gravity. 4.8 Concept of moment of inertia</p>	08

TEXT BOOKS

1. Bansal R.K., Engineering Mechanics, Laxmi Publication Pvt Ltd., Delhi.
2. Khurmi R.S., Engineering Mechanics, S. Chand & Co., Delhi.
3. Kapoor J.K., Applied Mechanics, Bharat Bharti Prakashan, Meerut.
4. Yadav K.S., Engineering Mechanics, Vayu Education of India.

REF BOOKS:

1. Kumar D.S., Engineering Mechanics, S.K. Kataria & Sons, Delhi.

DME 2082: MANUFACTURING PROCESS AND BUILDING MATERIAL

Credits: 02

Semester II

L-T-P : 0-0-4

The following shops are included in the syllabus.

1. Carpentry Shop-II
2. Plumbing Shop
3. Welding Shop -II
4. Electric Shop –II/ Machine Shop-II
5. Electronic Shop-II
6. Painting Shop

Note:

1. The branches e.g. Civil Engineering, Electrical Engineering, Mechanical Engineering, Production Engineering and Automobile Engineering will do **Machine Shop** instead of Electronic shop- II
2. The branches e.g. Electronics and Communication Engineering, Electronics and Instrumentation, Instrumentation and Control, Computer Engineering, Medical Electronics and Food Technology will do **Electronic shop-II** instead of Machine shop.
3. The instructor is to first explain the introductory part given at the beginning under each shop followed by demonstration and practice by students.

DETAILED CONTENTS

Module No.	Content	Teaching Hours
I	<p>Carpentry Shop-II</p> <p>1.1 Introduction to joints, their relative advantages and uses. Job I Preparation of dovetail joint and glued joint. Job II Preparation of mitre joint Job III Preparation of a lengthening Joint Job IV Preparation of at least one utility job with and without lamination.</p> <p>1.2 Demonstration of job showing use of rip saw, bow saw and tenon saw, method of sharpening various saws.</p> <p>1.3 Demonstration of job on band saw and circular saw, chain and chisel, universal wood working machine, Saw re-sharpening machine, saw brazing unit.</p> <p>1.4 Importance and need of polishing wooden items. Introduction to polishing materials. Job V Polishing on wooden items.</p>	08
II	<p>Plumbing Shop</p> <p>2.1 Introduction to various types of threads (internal and external)-single start, multi-start, left hand and right hand threads.</p> <p>2.2 Description and demonstration of various types of drills, taps and dies Selection of dies for threading, selection of drills, taps and reamers for tapping operations. Job I Making internal and external threads on a job by tapping and dieing operations (manually)</p> <p>2.3 Precautions while drilling soft metals, e.g. copper, brass, aluminium etc. Job II Drilling practice on soft metals such as aluminum, brass and copper</p>	08

	<p>Job III Preparation of a job by filing on non-ferrous metal up to an accuracy of $\pm 0.2\text{mm}$</p> <p>Job IV Preparation of job involving thread on GI pipe/PVC pipe and fixing of different types of elbow, tee, union, socket, stopcock, taps etc</p>	
III	<p>Welding Shop - II</p> <p>3.1 Introduction to gas welding, spot welding and seam welding and welding techniques. Adjustments of different types of flames in gas welding, demonstration and precautions about handling welding equipment.</p> <p>Job I Practice in handling gas welding equipment (Low pressure and High pressure) and welding and tacking practice on simple jobs.</p> <p>3.2 Common welding joints generally made by gas welding.</p> <p>Job II Preparation of butt joint by gas welding.</p> <p>Job III Preparation of small cot frame from conduit pipe by gas welding.</p> <p>Job IV Preparation of square pyramid from MS rods by welding (type of welding to be decided by students themselves).</p> <p>Job V Exercise of preparing a job on spot/seam welding machine.</p> <p>3.3 Demonstration and use of TIG and MIG welding equipment</p>	08
IV	<p>Electric Shop - II</p> <p>4.1 Importance of three-phase wiring and its effectiveness. Demonstration of three-phase wiring with the help of a demonstrating panel.</p> <p>Job I Laying out 3-phase wiring for an electric motor or any other 3-phase machine.</p> <p>Job II Connecting single-phase energy meter and testing it. Reading and working out the power consumption and the cost of energy.</p> <p>Job III Checking continuity of connection (with tester and series lamp) location of faults with a multimeter and their rectification in simple machines and/or other electric circuits fitted with earthing.</p> <p>Job IV Finding fault in simple electric machine and its rectification</p> <p>4.2 Demonstration of dismantling, servicing and reassembling a table fan/ceiling fan/air cooler/mixer/electric iron, electric heater, geyser, electric oven, air conditioner etc.</p> <p>Job V Testing single phase/three phase electrical motor by using voltmeters, ammeter, clip-on meter, tachometer etc.</p> <p>Job VI Reversing the direction of rotation of a motor.</p>	08
V	<p>Electronic Shop- II</p> <p>5.1 Identification, demonstration and uses of the items mentioned below:</p> <p>a) Various types of single, multi-cored insulated screened wire and cables -power, audio, video, co-axial, general purpose wires/cables</p> <p>b) Various types of plugs, sockets, connectors suitable for general purpose audio and video use, 2 and 3 pin mains plugs and sockets, RF plugs and sockets.</p> <p>Banana-plugs, and sockets, BNG, RCA, DIN, UHF, ear phone speaker connector, telephone jacks and similar male and female</p>	

	<p>connectors and terminal strips.</p> <p>c) Various types of switches such as normal/miniature toggle, slide, push button, piano key, rotary, micro switches, SPST, SPDT, DPST, DPDT, band selector, multi way master mains switch.</p> <p>d) Various types of protective devices such as : wire fuse, cartridge fuse, slow acting/fast acting fuse, HRC fuse, thermal fuse, single/multiple circuit breakers, over and under current relays.</p> <p>e) Materials: conducting, insulating and magnetic materials.</p> <p>f) Single beam simple CRO, signal generator and function-generator</p> <p>g) Regulated power supply-fixed and variable voltage, single output as well as dual output.</p> <p>5.2 Identification and familiarization with active and passive components; types and colour code of resistor, capacitors and potentiometers (including VDR, LDR, and thermistor). Identification of components including diode, LED, transistor, LCD, UJT, FET, coils, relays, read relays, transformers, linear and digital ICs, thyristors.</p> <p>5.3 Demonstration of the following:</p> <p>a) Making perfect solder joints and soldering on PCBs</p> <p>b) Removing components/wires by unsoldering.</p> <p>c) Assembling components on boards, chassis, tape strips.</p> <p>d) Laying of cables by various methods</p> <p>e) Modern soldering and de-soldering processes</p> <p>f) Working of active and passive components</p> <p>g) Testing of active and passive components by the use of multimeter</p> <p>Note: For the above field visits to relevant place may be arranged.</p> <p>Job I Cut, bend, tin components, leads, inserts and solder components (capacitor, diodes, transistor, IFT, ICs etc) on a PCB.</p> <p>Job II Soldering practice0</p> <p>Job III Temperature controlled soldering station</p> <p>Job IV De-soldering pump</p> <p>Job V De-soldering strip/wik</p> <p>Job VI De-solder, remove and clean all the components, wires from a given equipment, a PCB or a tag strip.</p> <p>Job VII Wiring of a small circuit on a PCB/tag strip involving lacking, sleeving and use of identifier tags</p> <p style="text-align: center;">Or</p> <p>Machine Shop</p> <p>Job I Study & sketch of Lathe machine.</p> <p>Job II Plane and step turning & knurling practice.</p> <p>Job III Thread cutting on circular bar</p> <p>Job IV Study & sketch of planning machine and plane a rectangle of cast iron.</p>	
VI	<p>Painting Shop</p> <p>Introduction to painting shop and its necessity. Different types of paint Introduction of powder coating plant and spray painting with their uses.</p>	08

Job I	Preparation of surface before painting such as cleaning, sanding, applying putty, filling procedure and application of primer coat and painting steel item.	
Job II	Painting practice by brush on MS sheet	
Job III	Practice of dip painting	
Job IV	Practice of lettering: name plates / sign board	
Job V	Polishing and painting on wooden and metallic surfaces	
Job VI	Practical demonstration of powder coating.	

References:

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Choudhary; Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III; India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy; MacMillan India Ltd. New Delhi
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd., New Delhi
5. Workshop Technoogy by B.S. Raghuwanshi; Dhanpat Rai and Co., New Delhi
6. Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi

DME 2081: ENGINEERING DRAWING-II

Credits: 03

Semester II

L-T-P : 0-1-4

DETAILED CONTENTS

Module No.	Content	Teaching Hours
I	<p>Detail and Assembly Drawing (2 sheets)</p> <p>1.1 Principle and utility of detail and assembly drawings</p> <p>1.2 Wooden joints i.e. corner mortice and tenon joint, Tee halving joint, Mitre faced corner joint, Tee bridle joint, Crossed wooden joint, Cogged joint, Dovetail joint, Through Mortice and Tenon joint, furniture drawing - freehand and with the help of drawing instruments.</p>	04
II	<p>Screw threads and threaded fasteners (8 sheets)</p> <p>2.1 Thread Terms and Nomenclature</p> <p>2.1.1 Types of threads-External and Internal threads, Right and Left hand threads (Actual and Conventional representation), single and multiple start threads.</p> <p>2.1.2 Different Forms of screw threads-V threads (B.S.W threads, B.A thread, American National and Metric thread), Square threads (square, Acme, Buttress and Knuckle thread)</p> <p>2.2 Nuts and Bolts</p> <p>2.2.1 Different views of hexagonal and square nuts and hexagonal headed bolt</p> <p>2.2.2 Assembly of Hexagonal headed bolt and Hexagonal nut with washer.</p> <p>2.2.3 Assembly of square headed bolt with hexagonal and with washer.</p> <p>2.3 Locking Devices</p> <p>2.3.1 Different types of locking devices-Lock nut, castle nut, split pin nut, locking plate, slotted nut and spring washer.</p> <p>2.3.2 Foundations bolts-Rag bolt, Lewis bolt, curved bolt and eye bolt.</p> <p>2.4 Drawing of various types of machine screw, set screw, studs and washers</p>	16
III	<p>Keys and Cotters (3 sheets)</p> <p>3.1 Various types of keys and cotters and their practical application and preparation of drawing of various keys and cotters showing keys and cotters in position</p> <p>3.2 Various types of joints (3 sheets)</p> <ul style="list-style-type: none"> - Spigot and socket joint - Gib and cotter joint - Knuckle joint 	06
IV	<p>Rivets and Riveted Joints (4 sheets)</p> <p>4.1 Types of general purpose-rivets heads (4 Sheets)</p> <p>4.2 Caulking and fullering of riveted joints</p> <p>4.3 Types of riveted joints</p> <ul style="list-style-type: none"> (i) Lap joint-Single riveted, double riveted (chain and zig-zag type) (ii) Single riveted, Single cover plate butt joint (chain type) (iii) Single riveted, double cover plate butt joint (chain type) (iv) Double riveted, double cover plate butt joint(chain and zig-zag type) 	08
V	<p>Couplings (2 sheets)</p> <p>5.1 Flange coupling (Protected and non-protected), muff coupling and half-lap muff coupling</p>	04

VI	Symbols and Conventions (2 sheets)		04
	6.1	Civil engineering sanitary fitting symbols	
	6.2	Electrical fitting symbols for domestic interior installations	
VII	AUTO CAD (for practical and viva-voce only)		06
	7.1	Concept of AutoCAD, Tool bars in AutoCAD, coordinate system, snap, grid, and ortho mode	
	7.2	Drawing commands – point, line, arc, circle, ellipse	
	7.3	Editing commands – scale, erase, copy, stretch, lengthen and Explode	

Note: Minimum 20 drawing sheets will be prepared by the students.

INSTRUCTIONAL STRATEGY

Teacher should show model or realia of the component/part whose drawing is to be made. Emphasis should be given on cleanliness, dimensioning and layout of sheet. Focus should be on proper selection of drawing instrument and its proper use.

References:

1. Engineering Drawing by KK Dhiman, Ishan Publications, Ambala, Haryana
2. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House, Anand, Gujarat
3. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi
4. Engineering Drawing by PS Gill published by SK Kataria and Sons, Delhi
5. Engineering Drawing by RB Gupta published by Satya Prakashan, New Delhi
6. Engineering Drawing by NS Kumar published by King India Publication, New Delhi

AHC 1082: CHEMISTRY LAB

LIST OF EXPERIMENTS

Credits: 1

Semester-II

L-T-P : 0-0-2

Module No.	Contents	Teaching Hours
I	<ol style="list-style-type: none"> 1. Prepare buffer solution of pH-4 and verify it by pH meter. 2. Determination of moisture content in a given sample of coal. 3. Determination of temporary and permanent hardness of water sample by complexometric method using EDTA as complexing agent. 4. Determination of constituents and amount of alkalinity in a given water sample. 5. Estimation of iron metal in the rust (solution of rust in concentrated HCl may be given). 6. To determine the amount of copper in the given solution of copperore with the help of hypo solution. 7. Preparation of Tetraminecopper(II)sulphate from copper sulphate solution. 8. Preparation of phenol-formaldehyde resin (Bakelite). 9. Preparation of soap. 10. To find out the percentage of available chlorine in a given sample of bleaching powder by Iodometric method. 	24

AHP 1082: APPLIED PHYSICS LAB

Credits: 01

Semester II

L-T-P: 0-0-2

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
1.	To Verify Ohm's law	24
2.	To Verify law of resistance in series.	
3.	To verify law of resistance in parallel.	
4.	To Convert a Galvanometer of known resistance into an Ammeter of given range.	
5.	To Convert a Galvanometer of known resistance into a voltmeter of given range.	
6.	To determine the resistivity (Specific resistance) of the given wire with the help of post office box.	
7.	To draw characteristic curve of a P-N junction diode.	
8.	To compare the emf's of two primary cells using potentiometer.	
9.	To Verify of Kirchhoff's Laws	
10.	To determine the internal resistance of a given primary cell using ammeter & voltmeter.	
11.	To determine the internal resistance of a given primary cell using potentiometer.	

DCS 2081: COMPUTER LAB II

Semester II

Credits: 01

LIST OF PRACTICALS

L-T-P: 0-0-2

Module No.	Contents	Teaching Hours
I	<p>Microsoft Excel</p> <ul style="list-style-type: none"> a) Starting Excel (Spread Sheet Processing) open worksheet, enter, edit data, formulae to calculate values, format data, create chart, printing chart, save worksheet, switching between different spread sheets b) Menu commands Create, format charts, organize, manage data, solving problem by analyzing data, creating graphs c) Work books <ul style="list-style-type: none"> ▪ Managing workbooks (create, open, close, save, rename), working in work books ▪ Editing a worksheet: copying, moving cells, pasting, inserting, deleting cells, rows, columns, find and replace text, numbers of cells, formatting worksheet d) Creating a chart <ul style="list-style-type: none"> ▪ Working with chart types, changing data in chart, formatting a chart, use chart to analyze data ▪ Using a list to organize data, sorting and filtering data in list e) Formulas <ul style="list-style-type: none"> ▪ Addition, subtraction, division, multiplication, percentage and auto sum <p>Making of at least three excel sheets after learning using formula/ commands on given topic.</p>	12
II	<p>Microsoft Word Resume Writing, Cover page making, etc.</p> <p>Microsoft Power Point Presentation of 6-8 sides using charts, designs, etc in groups.</p> <p>Animation Working on Coral Draw, Photoshop, flash</p>	12

DME 2083: ENGINEERING MECHANICS LAB

Credits: 01

Semester-II

L-T-P : 0-0-2

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
I	<ol style="list-style-type: none"> 1. Verification of the polygon law of forces using greaves and apparatus. 2. To verify the forces in different members of jib crane. 3. To verify the reaction at the supports of a simply supported beam. 4. To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane. 5. To find the mechanical advantage, velocity ratio and efficiency of a screw jack. 6. To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel. 7. To find mechanical advantage, velocity ratio and efficiency of single purchase crab. 8. To find out center of gravity of regular lamina. 9. To find out center of gravity of irregular lamina. 10. To determine coefficient of friction between three pairs of given surface. 	24

INSTRUCTIONAL STRATEGY

Applied Mechanics, being a fundamental subject, the teachers are expected to emphasize on the applications of applied mechanics in various subjects so that students are able to appreciate the importance of the subject.

DCS 3001: PROGRAMMING IN 'C'

Credits: 4

Semester-III

L-T-P : 3-1-0

Module No.	Contents	Teaching Hours
I	<p>Basics of C:- History of C, C character set, tokens, constants, variables, keywords, C operators (arithmetic, Logical, assignment, relational, increment, and decrement, conditional, bit wise, special, operator, precedence), C expressions data types, Formatted input, formatted output.</p> <p>Decision making:- Decision making and branching, if statement (if, if-else, else-if ladder, nested if-else), Switch case statement, break statement. Decision making and looping while, do, do-while statements for loop, continue statement</p>	12
II	<p>Arrays and Strings:- Declaration and initialization of one dimensional, two dimensional and character arrays, accessing array elements. Declaration and initialization of string variables, string handling functions.</p> <p>Functions:- Need of functions, scope and lifetime of variables, defining functions, function call (call by value, call by reference), return values, storage classes. Category of function (No argument No return value, No argument with return value, argument with return value), recursion.</p>	12
III	<p>Structure:- Defining structure, declaring and accessing structure members, initialization of structure, arrays of structure, union, difference between structure and union. Introduction to file System</p> <p>Pointers:- Understanding pointers, declaring and accessing pointers, Pointers arithmetic, pointers and arrays.</p>	12

Text Books:-

1. Schaum Series, Programming in C, McGraw Hills Publishers, New York.
2. Yashwant Kanetkar, Exploring – BPB Publications, New Delhi.

References Books:-

1. Complete reference C, BY Herbert Shield, Tata Mc-Graw Hill
2. The C++ Programming Language by Stroustrup, Bjarne 3rd.ed. New Delhi : Pearson Education, c2000

DCS 3002: OPERATING SYSTEM

Credits: 3

Semester-III

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Introduction to System Software:- Compiler, Assembler, Loader, Operating system- objectives and functions. Overview to modern Unix, Linux and android. Developments leading to modern operating system.</p> <p>Overview of Operating Systems: Definition, Functions, Types (Single user, Multiuser, Network, and Distributed), Storage structure, I/O structure, Caching.</p>	12
II	<p>Functions of Operating System:- Process Management Functions (Principles and Brief Concept), Process Scheduler, Scheduling Criteria, Process synchronization, Deadlocks-characterization Methods for handling deadlocks, Deadlock avoidance, Deadlock prevention, Recovers from Deadlock.</p> <p>Memory Management Function (Principles and Brief Concept):- Introduction, Single Process System, Fixed Partition Memory, Paging, Segmentation, Swapping, Fragmentation, Virtual memory management, Demand paging</p>	12
III	<p>I/O Management Functions (Principles and Brief Concept):- Dedicated Devices, Shared Devices, I/o Devices, Storage Devices, Buffering, Disk scheduling, Disk Cache.</p> <p>File Management:- File concept, File attributes, File operations, File types, File structure, Access methods, Directory structure, Free space management</p>	12

Text Book:

1. Milenekovie, "Operating System Concept", McGraw Hill, Delhi.
2. Tannenbaum, "Operating System Design and Implementation", PHI, Delhi.

References Books:

1. Stalling, Willium, "Operating System", Maxwell Macmillan.
2. Silveschatza, Peterson J, "Operating System Concepts", Willey.
3. Crowley, "Operating System", TMH, Delhi
4. Dietal, "An Introduction to Operating System", Addison Wesley.
5. Petersons, "Operating Systems", Addison Wesley.
6. Gary Nutt, "Operating System, A Modern Perspective", Addison Wesley.

DCS 3003: DATABASE MANAGEMENT SYSTEM

Credits: 3

Semester-III

L-T-P: 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Database System Concept & Data Modeling:- Basic concepts and Terminology of DBMS, File Processing System, Database System Vs File System Advantages of a DBMS over file processing system, Data Abstraction, Instances and Schema, Data Independence, Overall structure of DBMS.</p> <p>Data Models:- Relational Model, Network Model, Hierarchical Model, E-R Model,</p> <p>Database Languages: Data Definition Language, Data Manipulation Language, Database Access from application programs.</p> <p>Database Users and Administrators: Database users and User Interfaces, Database Administrator.</p>	12
II	<p>E-R Model: Entity Sets, Definition and Types of Attributes, Domains of Attributes, Relationship Sets, Mapping Cardinalities, Design Issues (Use of Entity sets Vs Attributes, Use of Entity Sets Vs Relationship Sets), Basic Concepts of E-R Diagram.</p> <p>Concept of Keys: Super Key, Candidate Key, Primary key, and Foreign Key.</p> <p>Relational Model: Structure of Relational Database, Database Schema, Introduction to Query languages, Concepts of Relational Algebra.</p> <p>SQL: Introduction to SQL, Basic Structure of SQL queries, Creating, Inserting, Updating and deleting tables, Rename Operation, String Operations, ordering the display of tuples, Set Operations, Aggregate functions, Null values, Nested sub queries.</p>	12
III	<p>Normalization: Definition, Concept of functional Dependencies First Normal Form, 2nd Normal Form, 3rd Normal Form, Boyce- Codd Normal Form.</p> <p>Data Storage and Querying: Overview of Physical Storage, Basic Concepts of Query Processing, General strategies for query processing,</p> <p>Transaction Processing: Single User Vs Multiuser System, Definition of Transaction, Read and Write Operations, Concept of Concurrency Control, Transaction States with diagram, Properties of Transactions, Schedules of Transactions, Characterizing Schedule based on Serializability, Use of Serializability, and Equivalence of schedules.</p> <p>Concurrency Control Techniques: Two phase Locking Techniques, Time Stamp Techniques, Validation Techniques.</p> <p>Deadlock Detection and Recovery: Deadlock Detection, Recovery from Deadlock.</p>	12

TEXT BOOKS:-

1. Database system concepts by Abraham Silberschatz, Henry F.Kroth and S. Sudharshan;
The McGraw Hill Publishers, 5 Edition.

References Books:

1. Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley
2. An introduction to database systems by Date C.J. Adison Wesley

DCS 3004: COMPUTER HARDWARE MAINTENANCE

Credits: 4

Semester-III

L-T-P: 4-0-0

Module No.	Contents	Teaching Hours
I	<p>Motherboard And Its Components:- Chipset basic, chipset Architecture: North / South Bridge architecture and Hub architecture. Architecture of Intel chipset 915 G & 945 G. Logical memory organization: Conventional memory, Extended memory, Extended memory, upper memory. Concept of cache memory: Internal cache, External cache (L1, L2, L3 cache). Overview and features of SDRAM, DDR, DDR2, DDR3. Features of Intel processors: Pentium, P2, Celeron, P3, P4, Pentium D and AMD processors: K6, Athlon XP, Athlon 64. Bios Basics, main functions. Motherboard Selection criteria</p>	16
II	<p>Storage Devices And Its Interfacing:- Recording Technique : FM, MFM, RLL Perpendicular magnetic recording, Hard disk construction and working Terms related to Hard Disk: Track, Sector cylinder, cluster, landing zone, MBR, Zone recording, write pre-compensation Formatting, Low level formatting, High level formatting, partitioning. FAT basics, Introduction to file system FAT 16, FAT 32, NTFS, Hard disk drive interface: features of parallel AT attachment (PATA), Serial ATA (SATA), ATA devices jumper selections: Master, slave, cable select, ATA cables. CDRom drive: Construction, Recording. DVD: Construction, Recording.</p> <p>Input & Output Devices:- Construction and Working Keyboard: Types of key switches: Membrane, Mechanical, Rubber dome, Capacitive and interface. Mouse: Mechanical, Opt mechanical, optical (New design). Scanner: Flat bed, sheeted, Handheld: Block diagram and specifications, OCR, TWAIN, Resolution, Interpolation. Printer: Dot matrix, Inkjet, Laser: Block diagram and specifications.</p>	16
III	<p>Display Devices & Interfacing:- CRT color monitor: Block diagram and function of each block 3.2 Characteristics of CRT monitor: Dot pitch, Resolution, Video bandwidth. Advantages of CRT display related to LCD display. LCD monitor: functional block diagram of LCD monitor, working principal, advantages and disadvantages Types : Passive matrix and Active matrix, Important characteristics : Resolution, Refresh rate, Response time, Basic block diagram of a video accelerator card.</p> <p>Power Supplies:- Block diagram and working of SMPS, Power supply characteristics: Rated wattage, Efficiency, Regulation, Ripple, Load regulation, Line regulation. Power problems: Blackout, Brownout, surges and spikes. Symptoms of power problems. Protection devices: circuit breaker, Surge suppressor: working UPS: Block diagram, working, Types, Ratings.</p>	16

	Interfaces:- SCSI, SCSI cables and connectors, SCSI drive configuration. USB features, Rs 232 : (voltages and 9 pin description)	
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TEXT BOOKS:-

1. IBM PC and Clones by B.Govind Rajalu, TMH

REFERENCE BOOKS:

1. Hardware and Software of Personal Computers by S.K.Bosr, Wiley Eastern Limited
2. Microprocessor and Interfacing by Hall, Douglas, Mcgraw Hill
Inside the PC by Peter Norton, Tech Media Publication

DCS 3005: DIGITAL ELECTRONICS

Credits: 4

Semester-III

L-T-P : 4-0-0

Module No.	Contents	Teaching Hours
I	<p>Introduction To Digital Techniques:- Digital circuit. Digital signal, Use of digital circuit and digital signal, Advantages and Disadvantages of Digital circuits, Generation of digital signal. Introduction to digital ICs, Characteristics of digital ICs.</p> <p>Number System - Introduction to Binary, Octal, Decimal, Hexadecimal number system, Conversion of number systems, 1's complement and 2's complement, Binary arithmetic (addition, subtraction). BCD code, BCD arithmetic (addition, subtraction).</p> <p>Logic Gates And Boolean Algebra:- Logical symbol, logical expression and truth table of AND, OR, NOT, NAND, NOR, EX-OR and EX-NOR gates. Universal gates – NAND and NOR gates. Basic laws of Boolean algebra, Duality theorem. De Morgan's 1theorems.</p>	16
II	<p>Combinational Logic Design/Circuits:- Simplification of Boolean expression using Boolean algebra, Construction of logical circuits forms Boolean expressions, Boolean expressions using Sum of products and product of sums forms, K-map representation of logical functions, Minimization of logical expressions using K-map (2, 3, 4 variables). Standardization of SOP & POS equations, Concept of Adders / Sub tractors, Truth table, K-map, Simplified logical expression and logical circuit using basic gates and universal gates of: (a) Half adder and full adder (b) Half sub tractor and full sub tractor. Block diagram, Truth table, Logical expression and logic diagram of Multiplexers (4:1 and 8:1), Multiplexer IC, Decoder/Encoder, Demultiplexer.</p>	16
III	<p>Flip Flops And Sequential Logic Design:- One-bit memory cell, clock signal, Symbol and Logic diagram using NAND gates, working and truth table of R S flip-flop. Symbol and Logic diagram using NAND gates, working, truth table and timing diagram of Clocked R S flip flop. Symbol and Logic diagram using NAND gates, working, truth table and timing diagram of J-K flip flop. Block diagram and truth table of Master slave J-K flip flop. Symbol, working and truth table of D-flip flop and T-flip flop. Applications of flip flops.</p> <p>Memories:- Classification of memories, RAM, ROM, PROM, EPROM, E²PROM.</p>	16

Text Books:

1. Malvino & Leach "Digital Principles and Applications", Tata McGraw Hill, Delhi.
2. Gayakwad R.A. "Op-Amps and Linear Integrated Circuits", Prentice Hall of India, Delhi.

Reference Books:

1. Taub & Schilling "Digital Electronics", Tata McGraw Hill, Delhi.
2. Nagrath IJ. "Electronics Analog and Digital", Prentice Hall of India Ltd Delhi.
3. Jain R.P. "Modern Digital Electronics", Tata McGraw Hill Delhi.

DCS 3081: PROGRAMMING IN 'C' LAB

Credits: 2

Semester-III

L-T-P : 0-0-4

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
1.	Programming Exercise on Executing and Editing, defining Variable and assigning values to variables.	48
2.	Programming Exercise on formatting input/output using printf and scanf	
3.	Programming Exercise on arithmetic's and relational operators.	
4.	Programming Exercise on arithmetic expression and their evaluation.	
5.	Programming Exercise using if, if-else statement.	
6.	Programming Exercise using nested if statement.	
7.	Programming Exercise on switch statement	
8.	Programming Exercise on for statement.	
9.	Programming Exercise on while and do-while statement.	
10.	Programming Exercise on functions.	
11.	Programming Exercise on arrays (single dimension)	
12.	Programming Exercise on structure.	
13.	Programming Exercise on Pointers.	
Note: Basic mini Project in 'C' in groups.		



DCS 3082: DATABASE MANAGEMENT SYSTEM LAB

Credits: 2

Semester-III

L-T-P : 0-0-4

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
1.	Write the SQL queries for data definition and data manipulation language.	48
2.	To implement various operations on a table.	
3.	To implement various functions in SQL.	
4.	To implement restrictions on the table.	
5.	To implement concept of grouping of Data.	
6.	To implement concept of Joins in SQL.	
7.	To implement the concept of sub-queries.	
8.	To implement the concept of views, sequence.	
9.	To implement the concept of PL/SQL using cursor.	
10.	To implement the concept of Procedure function and Triggers.	

DCS 3092: DIGITAL ELECTRONICS LAB

Credits: 2

Semester-III

L-T-P : 0-0-4

LIST OF PRACTICALS

Module No.	Contents	Teaching Hours
1.	Introduction to Digital Electronics Lab - Nomenclature of ICS's, Specifications	48
2.	Study of Breadboard and Datasheets.	
3.	Study of VCC and ground	
4.	Verification of truth tables of logic gates	
5.	Implementation of given Boolean function using logic gates.	
6.	Verification of state tables of RS-JK, T and D flip flops using NAND and NOR gates.	
7.	Implementation and verification of Adder (Half and Full) and subtraction using Logic gates	
8.	Implementation and verification of Adder (Half and Full) and subtraction using Logic gates	
9.	To study and verify NAND as universal gate.	
10.	To study 4-bit ALU(IC-74181) Mini-Project	

DCS 3083: COMPUTER HARDWARE AND MAINTENANCE LAB

Credits: 2

Semester-III

L-T-P : 0-0-4

Module No.	Contents	Teaching Hours
1.	Identifying external ports and interfacing	48
2.	Disassembling computer system	
3.	Identifying PC cards and interfacing	
4.	Identifying ports on the cards and interfacing	
5.	Assembling computer system.	
6.	Preventive maintenance of a PC	
7.	Understanding and study of CMOS	
8.	Partitioning and Formatting Hard disk	
9.	Installing system and application software	
10.	Starting the setup after installation of Operating System.	
11.	Understanding control panel settings	
12.	Working with antivirus software	
13.	Study of BIOS	
14.	Study of Network types and hardware.	
15.	Study of Network cables and connectors.	

DCS 4001: DATA STRUCTURES USING 'C'

Credits: 4

Semester-IV

L-T-P: 3-1-0

Module No.	Contents	Teaching Hours
I	<p>Introduction to data structure:- Data Representation, Abstract data Types, Data Structure and Structured Types, Difference between Abstract Data Types, Data Types And Data Structures. Data Types, Linear data type, Non- Linear data type, Primitive data type, Non primitive data type.</p> <p>Principles of programming and Analysis of Algorithms:- Algorithms, Different approaches for designing an algorithm, Complexity, Big 'O' Notation, Algorithm analysis.</p> <p>Stacks:- Introduction, Stacks as an Abstract Data Type, Primitive operations of stacks, Representation of Stacks through Arrays.</p>	12
II	<p>Linked List:- Introduction, Terminologies Node, Address, Pointer, Information, Next, Null pointer, Empty list etc. Operations on list Searching, Insertion and Deletion, Types of lists Linked list and Circular list, Header linked List, Doubly linked list, Application of Linked list</p> <p>Queues:- Introduction, Queue as an Abstract Data Type, Representation of Queues, Operations on queue: Searching, Insertion, Deletion. Circular Queues, Application of Queues.</p>	12
III	<p>Trees:- Introduction to Binary Trees, Basic Definition of Binary Trees, Traversing Binary Trees, Threaded Binary Tree, Height and Weight balanced Tree, Binary Search Tree, Operations on Binary Search Tree, AVL Search Tree, Operations on AVL Tree, Application of Trees.</p> <p>Graphs:- Introduction to Graphs, Terms Associated with Graphs,</p>	12

Text Book:-

1. Data Structures with C – Seymour Lipschutz By Schaum Series, Tata Magraw Hill
2. "Data Structures and Algorithms" by A. Aho, J. Hopcroft, J. Ulman, Pearson Education.

Reference books:-

1. "An introduction to data structures with Applications" by J. Tremblay, P. Soresan, Tata McGraw-Hill.
2. Data Structure Using C by ISRD Group New Dehli, Tata Magraw Hill

DCS 4002: OBJECT ORIENTED PROGRAMMING C++

Credits: 03

Semester-4

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Concept of Object Oriented Programming:- History & features: Its need & requirement, procedure oriented programming versus object oriented programming, basic concepts object oriented programming, and object oriented languages.</p> <p>Beginning with C++: Concepts & structure of C++ programming, concepts of structure.</p> <p>Objects & classes:- Specifying a class, Defining member functions, Arrays within a class, Creating objects, memory allocation for objects, static data & member function, Arrays of objects, objects as function argument.</p>	12
II	<p>Constructors and Destructors:- Concept of Constructor (Default, Parameterized, copy), Overloaded Constructors, Constructor with default argument, Destructors. Function overloading, Operator overloading (overloading unary & binary operators), rules for overloading operators.</p> <p>Inheritance:- Concepts of inheritance, Derived classes, Member declaration (Protected), Types of inheritance (Single, multilevel, multiple, hierarchical, Hybrid inheritance), Virtual base classes, Abstract classes, Constructors in derived classes, Member classes.</p> <p>Polymorphism:- Concepts of polymorphism, types of polymorphism, Overloading & overriding, Virtual function, Static & dynamic binding.</p>	12
III	<p>Pointers in c++:- Concepts of pointer (Pointer declaration, pointer operator, address operator, pointer expressions, and pointer arithmetic), Pointers & functions (Call by value, call by reference, pointer to functions, passing function to another function), Pointers in arrays (Searching, insertion & deletion), Pointers to string (Searching, finding length, comparison, concatenation, reverse), Pointers & objects (Pointers to objects, this pointer, and pointer to derived classes).</p> <p>Basic function of I/O system basics & File Processing:- Stream classes, using formatted & unformatted functions, using manipulator to format I/O, Basics of file system, opening & closing a file, reading & writing character from a file (get, put, get line, write), Command line arguments.</p>	12

TEXT BOOKS

- Object oriented programming with C++ by Balgurusamy, Tata McGraw Hill

REFERENCE BOOKS:-

- C++ The complete reference by Schilt, Tata McGraw Hill.
- Object oriented programming in by Lafore Robert, Galgotia

DCS 4003: COMPUTER GRAPHICS

Credits: 03

Semester-IV

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Basic of Computer Graphics: Basic of Computer Graphics, Applications of computer graphics, Display devices, Random and Raster scan systems, Graphics input devices, Graphics software and standards</p> <p>Graphics Primitives and Line Generation: Points, lines, circles and ellipses as primitives, Line drawing algorithms, Circle generating algorithms, scan conversion algorithms for primitives, Fill area primitives including scan-line polygon filling, inside-outside test, boundary and flood-fill, character generation, line attributes, area-fill attributes, character attributers, Midpoint circle generating algorithm, and parallel version of these algorithms.</p>	12
II	<p>Transformations: Basic transformation, Matrix representations and homogenous coordinates, Composite transformations, Reflections and shearing. Windowing and Clipping: Viewing pipeline, Viewing transformations, 2-D Clipping algorithms- Line clipping algorithms such as Cohen Sutherland line clipping algorithm, Liang Barsky algorithm,</p>	12
III	<p>3D concepts and object representation: 3D display methods, polygon surfaces, tables, equations, meshes, curved lies and surfaces, quadric surfaces, spline representation, cubic spline interpolation methods.</p>	12

TEXT BOOKS:-

1. Donald Hearn and M Pauline Baker, "Computer Graphics C Version", Pearson Education
2. Amrendra N Sinha and Arun D Udai," Computer Graphics", Tata MCGraw Hill.

REFERENCE BOOKS:-

1. Donald Hearn and M Pauline Baker, "Computer Graphics with OpenGL", Pearson education
2. R.K. Maurya, "Computer Graphics " Wiley Dreamtech Publication.
3. Rogers, " Procedural Elements of Computer Graphics", McGraw Hill
4. Mukherjee, Fundamentals of Computer graphics & Multimedia, PHI Learning Private Limited, Delhi India.
5. Foley, Vandam, Feiner, Hughes – "Computer Graphics principle", Pearson Education.
6. W. M. Newman, R. F. Sproull – "Principles of Interactive computer Graphics" – Tata MCGraw Hill.

DCS 4004: COMPUTER ORGANIZATION

Credits: 03

Semester-IV

L-T-P: 3-0-0

Module No.	Contents	Teaching Hours
I	Central Processing Unit Introduction General Register Organization: Control Word Stack Organization: Register Stack, Memory Stack, Reverse Polish Notation, Evaluation of Arithmetic Expressions Instruction Formats: Three Address Instructions, Two Address Instructions, One Address Instructions, Zero Address Instructions, RISC Instructions Addressing Modes (RISC): CISC Characteristics, RISC Characteristics, Overlapped Register Windows	12
II	Input Output Organization Peripheral Devices: ASCII Alphanumeric Characters Input-Output Interface: I/O Bus and Interface Modules, I/O Versus Memory Bus, Isolated versus Memory-Mapped I/O Asynchronous Data Transfer: Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface First-In, First-Out, Buffer Modes of Transfer: Interrupt-Initiated I/O, Software Considerations Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt, Priority Encoder, Software Routines, Direct Memory Access (DMA): DMA Controller, DMA Transfer Input-Output Processor: CPU-IOP Communication	12
III	Memory organization Concept of words — Memory size — Classification OF MEMORIES: Input processor memory, Main memory, Secondary memory, Cache memories, Virtual memories, architecture of ROM, Types of ROM, RAM (SRAM, DRAM) , Memory decoding, Floppy & Hard Disk (Sectors, Tracks, & Cylinders, Accessing mechanisms, Storage capacity), Magnetic tapes, CD-ROM — Memory hierarchy considering size, speed, cost., Advance Processor Architectures Instruction Pipelining, Arithmetic Pipelining, Super Scalar Processors, VLIW Processors, Parallel Processing, Flynn's Classification of Parallel Processing, Vector Computers, Array Processors, and Distributed Shared Memory Parallel Computers. Cluster of Workstations.	12

TEXT BOOKS:-

1. Computer Architecture and Organisation by Moris Mano

References Books:

1. Computer Architecture by J.P.Hayes
2. Structured Computer Organisation By Tanenbaum Andrew S, Ph

DCS 4005: MANAGEMENT INFORMATION SYSTEM

Credits: 3

Semester-IV

L-T-P: 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Foundation of Information System:- Information Systems (Concept, Resources and Products, Activities), Management Information System (Definition, Role, Features) Importance of Management, Process of Management (Planning, Organizing, Staffing, Coordinating, Directing), Organizational Structure – Basic model of organization structure, Organizational Behavior, Management Information System Organization, Strategic Management of Business – Concept of corporate planning, Essentiality of Strategic planning, Development of Business Strategy, Types of strategies, Tools of planning, MIS Business planning. Applications in manufacturing sector (Personal Management, Financial Management, Production Management, Materials Management, and Marketing Management) Applications in Service sector (Airlines, Hotels, Hospitals, Banking Insurance, Utilities, and Finance.)</p>	12
II	<p>Characteristics of decision making process- Decision Support System (Concept, Components, Development, Risk) Management Information System and Decision Support System, Concept of Artificial Intelligence & Expert System. Data warehouse (Concept, Design, Organization and Management, Architecture, Implementation), Data in data warehouse, Data Mining.</p> <p>Enterprise Resource Planning (ERP)- ERP (Basic features, Benefits ,selection, implementation) Enterprise Management System (EMS) & Management Information System (MIS) Customer Relationship Management (CRM) (Concept , Three Phases of CRM, Benefits , Challenges & Trends)</p> <p>Business Process Outsourcing (BPO):- BPO, Voice BPO i.e. Call Center, Non- Voice BPO, Challenges in BPO Management. Electronic Commerce Systems (E-Commerce)- Concept, Scope, B2C, B2B, C2C, E-Commerce Applications.</p>	12
III	<p>Viewing Versus Security:- Risks, Threats & Vulnerability, Assessing Risks. Common Controls (Physical, Electronic, Software, Management Controls), Common Threats (Natural Disasters Employee Errors, Computer Crime, Fraud, Abuse, Program Bugs) Ethical & Contractual Behaviors, Privacy, Access & Accuracy Issues, Property Issues.</p>	12

Text Books

1. Management Information Systems by O'Brien, J.A. 7th ed. New Delhi : Tata McGraw-Hill Publishing Company Limited, c2006
2. Management Information Systems by Jaiswal, M. New Delhi : Oxford University Press, c2004

Reference Books:-

1. Information System for Modern Management by Murdick, R.G, 3rd.ed. New Delhi : Prentice Hall of India Private Limited, c1984
2. Management Information Systems : Managing the Digital Firm by Laudon, K.C. 8th ed. New Delhi : Pearson Education, 2004
3. Management Information Systems : Text and Cases by Jawedkar, W.S. 2nd ed. New Delhi : Tata McGraw-Hill Publishing Company Limited, c2007

DCS 4081: DATA STRUCTURE LAB

Credits: 2

Semester-IV

L-T-P :0-0-4

List Of Practical

Module No.	Contents	Teaching Hours
1	The addition of two matrices using functions	48
2	Inserting and deleting elements in 2- D array	
3	The linear search procedures to search an element in given list	
4	The binary search procedures to search an element in a given list	
5	The bubble sort techniques	
6	The selection sort techniques.	
7	The factorial of a given number using recursion.	
8	Program to implement Tower of Hanoi problem using Recursion.	
9	Push and pop operation in stack.	
10	Insertion and Deletion of elements in queue.	
11	Insertion and Deletion of elements in circular queue.	
12	Insertion of elements in linked list.	
13	Deletion of elements in linked list.	
14	Insertion of elements in doubly linked list.	
15	Deletion of elements in doubly linked list.	

DCS 4082: OBJECT ORIENTED PROGRAMMING LAB

Credits: 2

Semester-IV

L-T-P: 0-0-4

List of Practical

Sr. No.	Contents	Teaching Hours
1.	Programs to input & output data (Simple programs).	48
2.	Programs to create object of class.	
3.	Programs to create arrays of objects.	
4.	Program to access static member variables.	
5.	Programs using object as function arguments using friend function.	
6.	Programs to define Class using constructor & destructor. (Default constructor, Multiple constructor, Copy constructor, Overloaded constructor).	
7.	Program using constructor with default argument.	
8.	Program to overload unary & binary operator.	
9.	Single inheritance & multilevel using protected member.	
10.	Multiple inheritance & virtual base class.	
11.	Program for pointers to arrays of integer.	

DCS 4083: GRAPHICS LAB

Credits: 2

Semester-IV

L-T-P: 0-0-4

List Of Practical

Module No.	Contents	Teaching Hours
1	To implement DDA algorithms for line and circle.	48
2	To implement Bresenham's algorithms for line and circle	
3	To implement Mid Point Circle algorithm using C.	
4	To perform 2D Transformations such as translation, rotation, scaling, reflection and shearing.	
5	To implement Cohen-Sutherland 2D clipping and window-viewport mapping.	
6	To implement Liang Barsky Line Clipping Algorithm.	
7	To perform 3D Transformations such as translation, rotation and scaling. To convert between color models.	
8	To perform animation using any Animation software	
9	To perform basic operations on image using any image editing software To draw different shapes such as hut, face ,kite ,fish etc.	

DCS 4084: COMPUTER ORGANIZATION LAB

Credits: 2

Semester-IV

L-T-P: 0-0-4

List of Practical

Module No.	Contents	Teaching Hours
1	To identify various components, devices and sections of computer.	48
2	To interconnect the system unit with the video monitor, mouse and key board and test the operation of the computer.	
3	Identification of chipsets and functional aspects of different subsystems on each card	
4	Understanding IC's	
5	Wiring of IC's	
6	Study and test of logic gates	
7	Adders and Subtractors.	
8	Study of seven segment display decoder	
9	Decoder and Multiplexer for Display units	
10	Sequential circuits	
11	Register	
12	Design of RAM and ROM chips	
13	Study of hardware components used in CPU organization.	
14.	Study of hardware components used in I/O organization.	
15.	Study of hardware components used in Memory organization.	

DCS 5001: SOFTWARE ENGINEERING

Credits: 3

Semester-V

L-T-P: 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Overview of Software Engineering & the Software Development Process:- Software Engineering –A layered Technology approach, A process framework & software project tracking & control. The Capability Maturity Model Integration technique, Process patterns, process Assessment, personal & Team Process models & Process Technology Theories. Process Models –Waterfall, Incremental, RAD, Prototype, Spiral.</p> <p>Software Engineering requirements & Development of Analysis & Design models:- Software Engineering core principles, Communication, Planning, Modeling, Construction & Deployment principles. Requirements Engineering Tasks, Initiating the requirement process, Analysis approaches of software & preparation of Analysis model, using Data modeling, Concepts, Object-oriented Analysis, Flow oriented model, Class-Based model, Behavioral Model</p>	12
II	<p>Testing Strategies & Methods:- Software Testing Fundamentals, A Strategic approach to software testing. Test Strategies for conventional software, Unit Testing, Integration Testing, Regression testing, smoke testing. Validation testing using Alpha & beta testing, system testing using recovery, security, stress & performance testing. Black Box & White Box Testing. Debugging process strategies.</p>	12
III	<p>Software Project Management:- The management spectrum – The people, The product, the process & the project. Project scheduling – Basic concepts, relationship between people & effort, effort distribution, defining a task for the software project, Defining a task network & scheduling of project. Risk Management – Reactive Vs Proactive risk strategies, software Risks, Risk Identification, Risk Projection & Risk refinement, monitoring & management. Change Management – SCM scenario, SCM repository & process.</p>	12

Text 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

Reference Books:

1. Software Engineering – A Practitioner’s Approach by RS Pressman, Tata McGraw Hill Publishers, New Delhi
2. Software Testing Techniques by B Beizer

DCS 5002: COMPUTER NETWORKS

Credits: 03

Semester V

L-T-P: 4-0-0

Module No.	Content	Teaching Hours
I	Introduction to Network:- Goals and Applications of Network, network structure and architecture, The OSI reference model, services, network topology design, connecting devices, basic idea of modulation and multiplexing. Physical layer Transmission media.	12
II	LAN Protocols: CSMA/CD, ALOHA Protocols, Data Link Layer, error detection and correction, flow control Network layer: IP Addressing, IP Address classes, subnet masking	12
III	Transport Layer- Design issues connection management, Flow control, TCP/IP Prototype, UDP Protocol Session Layer Design issues, Remote procedure call Presentation layer Design issues, Data compression techniques, Cryptography	12

Text Books

1. Computer Networks by Tanenbaum, Andrew S, Prentice Hall of India, New Delhi

Reference Books:

1. Data Communications and Networking by Foronzan, Tata McGraw Hill, New Delhi
2. Local area Networks by Peter Hudson.

DCS 5003: INTERNET AND WEB TECHNOLOGY

Credits: 03

Semester V

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
I	<p>Internet Basics:- Application and use of internet in various fields of Science and Technology, Specification and technical details for establishing Internet. Types and functions of modems, internet domains, domain name server, TCP/IP protocols, Internet service providers, Intranets,</p> <p>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)</p> <p>Hypertext, hyperlinks and hypermedia, its registration, browsers, search engines, proxy servers, Internet Applications: E-mail, Telnet, FTP, IRC, NNTP, Video conferencing, e-commerce</p>	12
II	<p>Developing Portals Using HTML:-Basic structure of HTML, designing a web page, inserting links images, horizontal rules, comments. Formatting text, title, headings, colors, fonts, sizes, simple tables and forms. Introduction (WEB publishing, HTML tag concept, <head><body>, URL, hyperlinks <link> href, <A> tags.</p> <p>HTML tags, hyperlinks. Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames</p>	12
III	<p>Using Front Page Front page editor, Front page explorer Client-side Scripting: VB Scripting Vs Java Script, Server-side Scripting: Scripting methods, Java Server Pages (JSP),Active Server Pages (ASP)</p> <p>Text processing using ASP, Handling server/Client requests, Accessing databases, using IIS web server; ASP Objects Developing Interactive Web</p>	12

Text Books

1. Internet 6-in-1 by Kraynak and Habraken, Prentice Hall of India Pvt. Ltd., New Delhi
2. Introduction To Web Technology by Pankaj Sharma, Katson Books

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

DCS 5004: JAVA PROGRAMMING

Credits: 4

Semester-V

L-T-P : 4-0-0

Module No.	Contents	Teaching Hours
I	<p>Introduction to Java:- Fundamentals of Object Oriented Programming , Object and Classes, Data abstraction and encapsulation, Inheritance, Polymorphism, Dynamic Binding.</p> <p>Java Features:- Compiled and Interpreted, Platform independent and portable, Object oriented Distributed, Multithreaded and interactive, High performance.</p> <p>Constant, Variables and Data Types, Constant, Data Types, Scope of variable, Symbolic Constant, Type casting, Standard default values.</p> <p>Operator and Expression:- Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operator Increment and Decrement Operator, Conditional Operator, Bit wise Operator, Special Operator.</p> <p>Decision making and Branching:- Decision making with if statement, Simple if statement, The if else statement, The else if ladder, The switch statement, The? : Operator.</p>	16
II	<p>Decision making and Looping:- The While statement, The do statement, The for statement, Jumps in Loops, Labeled Loops.</p> <p>Classes, Object and Methods:- Defining a class, Creating object, Accessing class members, Constructor, Methods Overloading, Static Member.</p> <p>Inheritance Extending a Class (Defining a subclass Constructor, Multilevel inheritance, Hierarchical inheritance, Overriding Methods, Final variable and Methods, Final Classes, Abstract method and Classes .</p> <p>Visibility Control:- Public access, friend access, Protected access, Private access, Private Protected access.</p> <p>Array, Strings and Vectors:- Arrays, One Dimensional array, Creating an array, Two Dimensional array, Strings, Vectors, Wrapper Classes.</p>	16
III	<p>Interfaces and Packages:-</p> <p>Interface: Multiple Inheritance Defining interfaces, Extending interfaces, Implementing interfaces, Accessing Interface variable.</p> <p>Packages: Putting Classes Together System Package, Using system Package, Naming Convention, Creating Package, Accessing a package, Using a package, adding a class to a package.</p> <p>Java Applets and Graphics Programming:- Applet Programming Local and remote applets, How applet differ from application, Preparing to write applets, Building applet code, Applet life cycle, Creating an Executable Applet, Designing a Web page, Applet tag, Adding Applet to HTML file, Running the Applet.</p>	16

Text Books:

1. Programming in JAVA by E. Balagursamy by TMH publications.
2. JAVA 2 Complete BPB publications.

Reference Books

1. Programming in JAVA 2 by QUE (Prentice Hall) publications.
2. MCSE networking guide by BPB publications.

DCS 5005: E-COMMERCE

Credits: 03

Semester V

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
I	<p>An Overview of E-Commerce: Trade Process & Trade Cycles their linkages with information exchange; Definitions of E-commerce & E-business & their difference; Problems with Manual Systems, Aims of E-commerce, Functions of E-commerce, Applications of E-commerce in business functions, Tools & Technologies for E-commerce, Types of E-commerce, Operational & Strategic benefits of E-commerce, Issues & Challenges in E-commerce .</p> <p>Electronic Data Interchange (EDI): Definition, Concept & Evolution of EDI, Traditional versus EDI enabled system for document exchange, EDI Layered Architecture, Process of EDI Message Exchange, Components of EDI, UNEDIFACT Standards & Message Structure, EDI in India, EDI enabled procurement process, EDI Implementation, UN 'Model Interchange Agreement' for international commercial use of EDI.</p>	12
II	<p>Intranet, Extranet and VPN: Architecture of Intranet, Intranet Software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment; The architecture of Extranets, Extranet Products & Services, Applications of Extranets, Business Models of Extranet Applications; Virtual Private Network (VPN): Architecture of VPN - service provider dependent & service provider independent configurations, VPN Security- User authentication & Data Security.</p> <p>Electronic Payment Systems: E-cash: Purchasing & using of e-cash; Electronic Purses their loading with cash and use; E-cheque payment system; Online Third Party Verified Payment</p>	12
III	<p>Web based E-Commerce: Need for web based business, Choosing the right format of website: Characteristics of PR site, Marketing site, Sales site/web-store and vertical & horizontal portals; Steps in setting up business on Internet: Selection & registration of domain name, Website development-client & server side tools, web authoring tools, catalogue & web store tools, Website hosting considerations-own versus rented server; Website Maintenance Online Promotion tools & techniques: Getting links to your site, banner advertisements & measuring advertisement effectiveness, Web Traffic Analysis.</p>	12

Text Book

1. e-commerce: Strategy, Technologies and Applications, David Whiteley, Tata McGraw Hill
2. E-Commerce: The Cutting Edge of Business, KK Bajaj & Debjani Nag, McGraw Hill.

Reference Books:

1. The Complete Reference: Internet, Margaret Levine Young, Tata McGraw Hill.
2. e-Commerce: Concepts, Models, Strategies, CSV Murthy, Himalayas Publishing House.
3. Frontiers of Electronic Commerce, Ravi Kalakota & Andrew B. Wilson, Addison-Wesley (An Imprint of Pearson Education)
4. Network Security Essentials: Applications & Standards, William Stallings, Pearson Education.

DCS 5081: NETWORKING LAB

Credits: 02

Semester V

L-T-P: 0-0-4

List of Practical

Module No.	Content	Teaching Hours
1.	Identification of various networks components	48
2.	Connections, BNC, RJ-45, I/O box	
3.	Cables, Co-axial, twisted pair, UTP	
4.	NIC (network interface card)	
5.	Switch, hub	
6.	Sketch wiring diagrams of network cabling considering a computer lab of 20 systems	
7.	Interfacing with the network card (Ethernet)	
8.	Preparing of network cables	
9.	Establishment of a LAN	
10.	Use of protocols in establishing LAN	
11.	Trouble shooting of networks	
12.	Installation of network device drivers	
13.	Installation of networks (Peer to Peer Networking client server interconnection)	
14.	Exercises on Cisco Packet Transfer Software.	

DCS 5082: WEB TECHNOLOGY LAB

Credits: 02

Semester V

L-T-P: 0-0-4

List Of Practical

Module No.	Content	Teaching Hours
1	Configuring computer system to access internet	48
2	Using e-mail	
3	Using WWW for accessing relevant information	
4	Creating Web pages using HTML	
5	Creating web pages using front page	
6	Demonstration of audio-video conferencing	
7	Demonstration of e-commerce transaction	
8	Design of Forms using Java Script or Visual Basic Script	
9	Validation of user queries and responses in the Forms using Java Script or VB script	
10	Create a Homepage with frames, animation, background sound and hyperlinks .	
11	Design fill-out form with text, check box, radio buttons etc and embed	
12	Java script or VB script to validate users input. .	
13	Develop interface with database (MS-Access etc) for online retrieval and	
14	storage of data through HTML form.	

DCS 5083: JAVA PROGRAMMING LAB

Credits: 02

Semester V

L-T-P: 0-0-4

List of Practical

Module No.	Content	Teaching Hours
1	To write a Java application program which clarify the following points? How to compile and run, How to set path and class path, Single and Multi-line comments, and, Command line arguments. Data Types, Variables Operators & Arrays	48
2	To write a Java program which defines and initialized different data types: byte, short, int, long, float & double.	
3	Problems related to Character and Boolean data type.	
4	Problems related to one and two dimensional array.	
5	Problems related to Arithmetic, bit wise and relational operators.	
6	Control Statements & Looping Structure	
7	Problems related to: IF-ELSE, IF-ELSE-IF, SWITCH statements. Problems related to the following looping statements — WHILE, DO-WHILE & FOR. Problems related to nested looping and jump statements (BREAK, CONTINUE & RETURN) Classes ,Objects & Methods	
8	To write a Java program to clarify the following points: (a) how to declare a class, (b) how to create an object, (c) how methods are defining in a class, (d) access variables and methods.	
9	To construct a Java program which defines: (a) how arguments values are passed to a method, (b) use of new operator, constructor and finalize) method, (c) passing objects to a method, (d) declaration of static keyword.	
10	To practice problems related to: (a) Method overloading, (b) Multiple constructor, (c) Calling constructor from a constructor. Exception Handling	
11	To write a Java program which is constructed using TRY, CATCH and FINALLY blocks Inheritance & Extending Classes (Interface)	
12	To write Java programs which clarify the following: (a) super class, (b) sub-class/derive class, (c) understanding abstract and final class, (d) polymorphism. To practice problems related to: (a) Multiple Inheritance, (b) Interface, (c) Extending Interfaces.	

DCS 6001: .NET PROGRAMMING

Credits: 04

Semester VI

L-T-P: 3-1-0

Module No.	Content	Teaching Hours
I	<p>NET evolution Need and perspective in current scenario, .net framework overview structural diagram</p> <p>.Net Framework Base Classes User and program interfaces, windows forms, web forms, console applications</p> <p>XML An overview of XML, use of XML, integrity of XML with databases, XML as the .NET Meta language</p>	12
II	<p>Visual Studio .NET Common IDE for all languages, the common language specification, all .net languages, management of multiple language, projects.</p> <p>Language Changes Visual basic, C++, C#+, overview of C#, C# classes Introduction, Data Types, Identifiers, variables & constants, C# statements, Object Oriented Concept, Object and Classes, Arrays and Strings, System Collections, control flow in C#.</p> <p>Anatomy of .NET Applications Assembly, module, type custom types, metadata and managed data</p>	12
III	<p>ASP.NET:-Features of ASP.NET, Stages in Web Forms Processing, Introduction to Server Controls, HTML Controls, Validation Controls, User control, Data Binding Controls, Configuration, Personalization, Session State, ADO.NET</p>	12

Text Books:

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

DCS 6002: MULTIMEDIA

Credits: 03

Semester VI

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
I	<p>Introduction to Multimedia:-What is multimedia, Components of multimedia, Web and Internet multimedia applications, Transition from conventional media to digital media.</p> <p>Computer Fonts and Hypertext:-Usage of text in Multimedia, Families and faces of fonts, outline fonts, bitmap fonts International character sets and hypertext, Digital fonts techniques</p>	12
II	<p>Audio fundamentals and representations:-Digitization of sound, frequency and bandwidth, decibel system, data rate, audio file format, Sound synthesis, MIDI, wavetable, Compression and transmission of audio on Internet, Adding sound to your multimedia project, Audio software and hardware.</p> <p>Image fundamentals and representations:-Colour Science , Colour, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression and File Formats :GIF, JPEG, JPEG 2000, PNG, TIFF, EXIF, PS, PDF, Basic Image Processing [Photoshop], Use of image editing software, White balance correction, Dynamic range correction, Gamma correction, Photo Retouching.</p>	12
III	<p>Video and Animation:-Video Basics , How Video Works, Broadcast Video Standards, Analog video, Digital video, Video Recording and Tape formats, Shooting and Editing Video (Use Adobe Premier for editing), Video Compression and File Formats. Video compression based on motion compensation, MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21, Animation: Cell Animation, Computer Animation, Morphing.</p> <p>Multimedia Authoring:-Multimedia Authoring Basics, Some Authoring Tools, Macromedia Director & Flash.</p>	12

Text Book

1. Parekh Ranjan, "Principles of Multimedia", Tata McGraw-Hill, 2007
2. Anirban Mukhopadhyay and Arup Chattopadhyay, "Introduction to Computer Graphics and Multimedia", Second Edition, Vikas Publishing House.

Reference Books

1. Tay Vaughan, "Multimedia making it work", Tata McGraw-Hill, 2008.
2. Rajneesh Aggarwal & B. B Tiwari, " Multimedia Systems", Excel Publication, New Delhi, 2007.
3. Li & Drew, "Fundamentals of Multimedia" , Pearson Education, 2009.

DCS 6003: INFORMATION SECURITY

Credits: 03

Semester VI

L-T-P: 3-0-0

Module No.	Content	Teaching Hours
I	History of Information Systems and its Importance, basics, Changing Nature of Information Systems, Need of Distributed Information Systems, Role of Internet and Web Services, Information System Threats and attacks, Classification of Threats and Assessing Damages Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, authentication Service Security, Security Implication for organizations, Laptops Security Basic Principles of Information Security, Confidentiality, Integrity Availability and other terms in Information Security, Information Classification and their Roles.	12
II	Security Threats to E Commerce, Virtual Organization, and Business Transactions on Web, E Governance and EDI, Concepts in Electronics payment systems, E Cash, Credit/Debit Cards. Physical Security- Needs, Disaster and Controls, Basic Tenets of Physical Security and Physical Entry Controls, Access Control- Biometrics, Factors in Biometrics Systems, Benefits, Criteria for selection of biometrics, Design Issues in Biometric Systems, Interoperability Issues, Economic and Social Aspects, Legal Challenges.	12
III	Model of Cryptographic Systems, Issues in Documents Security, System of Keys, Public Key Cryptography, Digital Signature, Requirement of Digital Signature System, Finger Prints, Firewalls, Design and Implementation Issues, Policies. Information Security & Law, IPR, Patent Law, Copyright Law, Legal Issues in Data mining Security, Building Security into Software Life Cycle Ethics- Ethical Issues, Issues in Data and Software Privacy Cyber Crime Types & overview of Cyber Crimes.	12

Text Books

1. Principles of Computer by Dwayne Williams, Mc Graw Hill Technology Education
2. Data communication and networking by B.A.Farouzan, Tata McGraw Hill

Reference Books

1. Computer Networks by A.S.Tanenbaum, PHI, ISBN 81-203-2175-8.

AHE 6001 : PROFESSIONAL AND BUSINESS COMMUNICATION

Credits: 3

Semester-VI

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Introduction What is Communication? Why Communication is Key to Success in today's Business? Goals of Communication; Effective Communication; Communication Competence</p> <p>Forms of Technical Communication Technical Reports; Forms, Memos, Letters and emails; Graphics; Reports; White Papers;</p> <p>Communication Processes Oral Communication Techniques; Speaking in Public; Negotiating Skills; facilitator and Participant skills in meetings; Proper Business Writing; Email Etiquettes; Reading and Comprehension skills.</p> <p>The Art of Listening Benefits of Effective Listening; Hearing versus Listening; A Model of Listening; Gender Differences and Listening; Improving Your Listening Skills; How to talk so that Others will Listen; Body language</p>	12
II	<p>Interpersonal Work Defining Interpersonal Communication; The Impact of Conversations on Relationships; Formal and Informal Communication; Vertical versus Horizontal Organizations; Communication Styles; Communication Climate; Job Productivity and Satisfaction at Work Place; Building Interpersonal Skills in the Workplace, Etiquets</p> <p>Communication in Groups and Teams The Elements of Successful Group Communication; Types of Small Groups Operating in an Organization; Demographic Variables that affect Group Life; The Group Decision Making Process; Tools for Effective Problem Solving; Performing Effectively in Teams; managing Meeting mania; How to Stand out at Someone else's Meeting, probing skills, Voice Characteristics in Articulate Speaking, Tone, Pitch, Rate of Speech and Volume</p>	12
III	<p>Making Presentations Facets of Professional Presentations; Understanding Your Audience and the Speaking Occasion; Managing Time; Establishing Your Presentation Goals; Selecting the Best Format for your Presentation. Brainstorming; Developing Logical Sequences for Your Messages; Supporting Ideas; Generating Appeals and gathering evidence; Setting and Achieving your Image Goals; Optimizing; your PERC-Quotient, Being spontaneous – Capturing and holding your audience's attention</p> <p>Technology in Communication Communication Technology Today; Mobile Communication, Use of electronic gadgets (mobile phone, iphone, ipod, e-books,etc) and etiquettes, Changing Role of Communication Technology in the Workplace; Communication Competence and Life-Long Learning; Human Technology and the Virtual Office;</p>	12

Text Books:

1. Kitty Locker and Stephan K.Kaczmarek, "Business Communication", 3rd Edition, Tata McGraw-Hill, 2007.

Reference Books

1. Andrea Rutherford, “Basic Communication Skills for Technology”, Pearson Education.
2. Meenakshi, Raman and S.Sharma, “Technical Communication” (OUP), 2009.

DCS 6081:.Net LAB

Credits: 01

Semester VI

L-T-P: 0-0-2

List Of Practical

Module No.	Content	Teaching Hours
1 2	Installation of .net Study of VB environment with following details :- - Form and their types. - Intrinsic components – text box, label, combo, list, heck box, and option button. - Design time properties. - Different windows and their uses.	24
3	Design forms to perform mathematical operations like addition, subtraction, multiplication and division using: - Text box, labels. - Options to be selected using option, check box and combo box.	
4	Design forms to use Date, Time, String, Mathematics functions with help of text box, label, radio button, check box, combo box and command button.	
5	Using image control and scroll bar, design form to change height, width of image, movement to image. Using picture box and image list, flip the image on click of command button.	
6	Design explorer using Directory, drive, file list box and common dialog controls.	
7	Design text editor with menu having copy, cut, paste, select, search, replace the text and load and save the file.	
8	Design stop watch with faculty of start, stop, reset using timer control, option, label, text box.	
9	Practical including Data bound controls like DBgrid, DBcombo, Textbox, Combo, List, MS Flex grid and Database control like ADO, DAO, RDO to perform insertion, deletion, updation, display, Search.	
10	Design MDI form including Menu bar, Toolbar, Status bar.	
11	Design the interface to perform following operation on the file like create, open, read , write , delete , search.	

DCS 6082: MULTIMEDIA LAB

Credits: 02

Semester VI

L-T-P: 0-0-4

List Of Practical

Module No.	Content	Teaching Hours
1	BASICS:-Overview of the Adobe Photoshop. Image modes. Image size and resolution. Image color concepts.	48
2	BASIC TOOLS AND COLOR:-Overview of the Photoshop toolset. Brushes and brush types. Choosing colors by eye. Numerical color. Pantone color. Canvas color. Review and assignment.	
3	SELECTIONS AND MASKS:-Marquee selection tools. Lasso & Wand selection tools. Selection tool. Select menu commands. Transforming selections. Quick mask mode. Alpha channels and channel palette. Mask/selection practice exercise.	
4	LAYERS AND BLEND MODES :-Intro to layers. Move, copy and transform layers. Advanced layer features. Applying layer effects. Layers review. Review and assignment.	
5	PAINTING TOOLS :-Intro, paint bucket and fill command. Gradient, pattern and line tools. Brushes and fade command. Pencil, paintbrush and airbrush	
6	tools. Eraser tools.	
7	RETOUCHING TOOLS :-Retouching tools intro and tips. Blur, sharpen, smudge. Dodge, burn, sponge. Clone stamp, history brush, art history brush. Practice exercises. Review and assignment.	
	ADOBE IMAGE READY :-Introduction to Image Ready. Opening and importing files. Image Reader workspace. Toolbox. Animation.	

DCS 6021: SOFTWARE PROJECT MANAGEMENT

Credits: 3

Semester-VI

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Review of software engineering concepts Principles of software engineering, Features of good software, Quality Requirement in different Application Areas</p> <p>Software Process:-Software Process and Models, Tools and techniques of Process Modeling, Product and Process</p> <p>Introduction to Project Management:-Definition of the project, Project specification and parameters, Principles of Project management, Project management life cycle</p>	12
II	<p>Software Project Planning:-Project activities and Work Breakdown Structure (WBS), Criteria for completeness in the WBS, Activity Resource Requirements and Cost, Joint Project Planning Session, Project Management Plan</p> <p>Project Economics:-Project Costing, Empirical Project Estimation Techniques, Decomposition Techniques, Algorithmic methods, Automated Estimation Tools</p> <p>Project Scheduling and Tracking Techniques:-Why are projects delayed? Effort Estimation Techniques, Task Network and Scheduling Methods, Monitoring and Control Progress, Graphical Reporting Tools</p>	12
III	<p>Risk Analysis and Management:-Risk Concepts and Identification, Risk Assessment and Control, Risk Components and Drivers, Risk Tracking and Monitoring, Risk Mitigation and Management</p> <p>Software Metrics and Project Management:-Measures, Metrics and Indicators, Process and project metrics, Statistical Metrics and Process Monitoring, Function-point and project management</p> <p>Project Control and Closure :-Defect Collection and Audit, Causal and Pareto Analysis, Project Closure Analysis</p> <p>Project Management Issues with regard to New Technologies Object-oriented Methodology, Web-based Projects, Embedded Systems</p>	12

Text Books

1. John J. Rakos, "Software Project Management for Small to Medium Sized Projects", 1998,

Reference Books

1. Walker Royce, "Software Project Management: A Unified Framework", 2001, Addison Wesley Professional, ISBN-10: 0201309580, ISBN-13: 9780201309584.
2. Pankaj Jalote, "Software Project Management in Practice", 2001, Addison-Wesley Professional, ISBN-10:0-201-73721-3, ISBN-13: 9780201737219.

DCS 6022: DATA WAREHOUSEING AND DATA MINING

Credits: 3

Semester-VI

L-T-P : 3-0-0

Module No.	Contents	Teaching Hours
I	<p>Introduction and Background An introduction to multidisciplinary filed of data mining, Discussion on the evolutionary path of database technology that has led to the need for data warehousing and data mining, different kind of data on which data mining applied, classification of data mining system, Major issues in Data miming, Stress on important of its application potential.</p> <p>Data Warehousing and OLAP Concepts of Data warehouse, deference between operational database system and data warehouse, Multidimensional Data Model: data cube, Stars – Snowflakes – Fact schemas for multidimensional database, measures, concept hierarchies, OLAP operation on multidimensional Data Model, Data Warehouse architecture, Types of OLAP servers, Life cycle of data warehouse implementation, Relationship between data warehouse and data mining.</p>	12
II	<p>Data Mining Primitives Data Preprocessing including Data cleaning - Data integration - Data transformation, Discretization and concept Hierarchy generation, Definition and Specification of a generic data miming task, Description of Data mining query language with few example queries.</p> <p>Concept Description: Characterization Introduction to concept description, Data Generalization and Summarization based characterization: Attribute Oriented Induction (AOI) – Efficient implementation of AOI</p> <p>Association Analysis Association rule mining, Mining Single Dimensional Boolean Association rule in truncation database, Mining multilevel association rule.</p>	12
III	<p>Mining Complex Types of Data Data mining issues in object oriented databases, spatial databases and multimedia databases, time series databases, text databases, web mining: web usage mining – web content mining – web log attribute.</p> <p>Application of Data Warehousing and Data Exploration of web sites on data warehousing and data mining application including bibliography databases, Corporate Houses and Research labs. Use of data mining packages and data warehousing packages, e.g. SAS, IBM, excel miner tools.</p>	12

Text Books

1. Data Mining: Concepts and Techniques, Second Edition (The Morgan Kaufmann Series in Data Management Systems) Jiawei Han and Micheline Kamber, ISBN-10:1558609016 ISBN-13: 978-1558609013; 2005

Reference Books

1. Arun K Pujari, "Data Mining Techniques" ISBN; 8173713804; ISBN-13: 9788173713804;978-8173713804; Universities Press.
2. M. Jarke, M. Lenzerni, Y. Vassiliou, and P. Vassiladis, "Fundamentals of Data Warehouses, 1st edition"; Year of Publication: 1999 ISBN:3540653651 Springer-Verlag New York, Inc. Secaucus, NJ, USA.