Diploma Computer Science and Engineering Syllabus Structure
(July 2020 onwards)

Course No.	Course Name	L	T	P	C	Course No.	Course Name	L	T	P	C
	Semester I						**Semester II**				
DHSS101	Communication in English	3	0	0	6	DHSS271	Communication in English Lab	0	0	2	2
DCH102	Chemistry-I	2	1	0	6	DCSE202	Computer Fundamentals & Programming	2	0	0	4
DCH172	Chemistry-I Lab	0	0	2	2	DCSE272	Computer Fundamentals & Programming Lab	0	0	2	2
DMA103	Mathematics-I	3	0	0	6	DEE203	Fundamentals of Electrical & Electronics Engineering	2	1	0	6
DME104	Engineering Drawing	2	0	0	4	DEE273	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	2
DME174	Engineering Drawing Lab	0	0	2	2	DMA204	Mathematics-II	3	1	0	8
DPH105	Applied Physics - I	2	1	0	6	DME205	Engineering Mechanics	3	0	0	6
DPH175	Applied Physics - I Lab	0	0	2	2	DPH206	Applied Physics – II	2	1	0	6
DME176	Workshop Practice	0	1	4	6	DPH276	Applied Physics - II Lab	0	0	2	2
Contact Hours: 25		12	3	10	40	**Contact Hours: 23**		12	3	8	38
	Semester III						**Semester IV**				
DCSE301	Computer Architecture and Organization	3	1	0	8	DCSE401	Data Structure using C	3	1	0	8
DCSE302	System Programming	3	0	0	6	DCSE471	Data Structure using C Lab	0	0	3	3
DCSE372	System Programming Lab	0	0	3	3	DCSE402	Computer Communication & Networking	3	0	0	6
DECE303	Digital Electronics	2	1	0	6	DCSE403	Microprocessor	3	0	0	6
DECE373	Digital Electronics Lab	0	0	2	2	DCSE473	Microprocessor Lab	0	0	3	3
DMA301	Mathematics-III	3	0	0	6	DCSE404	Operating System	3	1	0	8
DHSS302	Engineering Economics and Accountancy	3	1	0	8	DCSE405	Computer Hardware and Networking	1	1	0	4
						DCSE475	Computer Hardware and Networking Lab	0	0	3	3
Contact Hours: 22		14	3	5	39	**Total Contact Hours 25**		13	3	9	41
	Semester V						**Semester VI**				
DCSE501	Database Management Systems	3	0	0	6	DCSE601	Web Technology	3	0	0	6
DCSE571	Database Management Systems Lab	0	0	3	3	DCSE671	Web Technology Lab	0	0	3	3
DCSE502	Software Engineering	3	0	0	6	DCSE691	Major Project	0	2	8	12
DCSE503	Object Oriented Programming with C++	3	0	0	6	DCSE692	Industrial Visit and Seminar	0	0	2	2
DCSE573	Object Oriented Programming with C++ Lab	0	0	3	3	DHSS601	Industrial Management & Entrepreneurship	3	0	0	6
DCSE504	Cryptography & Network Security	3	0	0	6	DCSE61*	Elective 1	-	-	-	6
DCSE574	Cryptography & Network Security Lab	0	0	3	3	DCSE61*	Elective 2	-	-	-	6
DCSE51*	Elective (Any One)	-	-	-	6						
Total Contact Hours 24*		15	0	9	39	**Total Contact Hours 25***		10*	0	15*	41
Total Mandatory Credits: 238											

Semester I

Paper Code: DHSS101   **Credit: 6**
Paper Name: Communication in English   **L-T-P: 3-0-0**
Total Contact Hours: 39

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Module 1: Parts of Speech   **Contact hours: 3**
1.1 Recognition and review of Nouns, Pronouns, Verbs, Adverbs, Adjectives, Prepositions, Conjunctions, Interjections
1.2 Knowledge of Subject, Object and Compliment of the Verb
1.3 Herbals –Infinitival, Gerund and Preposition.

Module 2: Prepositions of time and place   **Contact hours: 5**
2.1 Contextual teaching of prepositions of time - on, in, at, since, for, ago, before, to, past, to, from, till/until, by.
2.2 prepositions of place: in, at, on, by, next to, beside, near, between, behind, in front of, under, below, over, above, across, through, to, into, towards, onto, from.

Module 3: Clause, phrases and Relative Clauses   **Contact hours: 2**
3.1 Basic definitions of clauses and phrases
3.2 Focus on Relative Pronouns and their use in sentences as relative clauses.

Module 4: Subject Verb Agreement   **Contact hours: 5**
 4.1 Rules that guide the agreement of the subject to its verb

Module 5: Sentence types and Transformation of sentences   **Contact hours: 5**
5.1 Assertive sentences, Exclamatory sentences, Interrogative sentences, Negative sentences, Compound sentences, complex sentences, simple sentences, Degrees of Comparison.

Module 6: Voice   **Contact hours: 3**
6.1 Change from Active Voice to Passive Voice and vice versa

Module 7: Punctuation   **Contact hours: 5**
7.1 Use of the comma, semi-colon, colon, apostrophe, exclamation mark, question mark and quotation marks

Module 8: Word formation   **Contact hours: 2**
8.1 Change of one part of speech to the other: from Verbs to Nouns, Nouns to Verbs, Adjectives to Nouns, Nouns to Adjectives, Verbs to adverbs, and Adverbs to Verbs

Module 9: Affixation   **Contact hours: 2**
 9.1 Prefixes and Suffixes and new word formations

Module 10: Nominal Compounds   **Contact hours: 2**
10.1 Common nominal compound

Module 11: Paragraph Writing   **Contact hours: 5**
11.1 Descriptive Paragraph on various related topics.

Books / References:
1. Essential English Grammar with Answers by Raymond Murphy (Cambridge University Press)
2. English for Polytechnics by Dr Papori Rani Barooah (Eastern Book House Publishers)
3. English Grammar by Annie Brinda (Cambridge University Press)

Paper Code: DCH102	**Credit: 6**
Paper Name: Chemistry-I	**L-T-P: 2-1-0**
Total Contact Hours: 40	

Module 1: Periodic table, Atomic structure	**Contact hours: 4**

1.1 Electrons, protons, neutron
1.2 Atomic mass (A), atomic number (Z)
1.3 Isotopes, isobars, isotone, orbit and orbitals, electronic configuration (upto Z=30)
1.4 Modern periodic table, groups and periods.

Module 2: Electrochemistry	**Contact hours: 5**

2.1 Electrolytes, Faraday's law of electrolysis
2.2 Numerical problems, application of electrolysis
2.3 Oxidation and reductions
2.4 Redox reactions.

Module 3: Metallurgy	**Contact hours: 5**

3.1 General principles of metallurgy
3.2 Minerals, ore, gangue, slag, flux, roasting, calcination etc.
3.3 Metallurgy of iron and aluminium
3.4 Manufacture of steel by Bessemer process
3.5 Open hearth process and LD process, alloys

Module 4: Building Materials	**Contact hours: 3**

4.1 Portland cement
4.2 Types of manufacturing
4.3 Setting and hardening of cement, special cement. Glass, Bricks.

Module 5: Lubricant	**Contact hours: 3**

5.1 Definition and classification of lubricants
5.2 Important functions of lubricants.

Module 6: Polymer and Polymerization	**Contact hours: 4**

6.1 Types of polymer, thermoplastic and thermosetting plastic
6.2 Preparation and applications of PE, PVC, PP, Perpex, Teflon, Bakelite, nylon
6.3 Natural rubber, Synthetic rubber.

Module 7: Organic Chemistry	**Contact hours: 6**

7.1 IUPAC nomenclature, Alkane, alkene, alkyne, alcohol synthesis and applications.

Module 8: Environmental Chemistry	**Contact hours: 6**

8.1 Definition, Types of pollution, pollutants, Water quality measurements- D.O, B.O.D, C.O.D, hardness of water, removal of hardness, TDS
8.2 Greenhouse effect, acid rain, Ozone layer depletion.

Module 9: Industrial chemistry	**Contact hours: 4**

9.1 Ethanol manufacture from starch by fermentation
9.2 Fuels- Classifications, calorific values, natural gas, water gas, producer gas, LPG, power alcohol
9.3 Petroleum- refining, octane number, cetane number.

Books / References:

1. S. Chawla;A Text Book of Engineering Chemistry, Dhanpat Rai Publishing Co.
2. Jain and Jain; Engineering Chemistry, Dhanpat Rai Publishing Co.
3. V.R. Gowariker, N.V. Viswanathan, J. Sreedhar, Polymer Science, New Age International Publisher.
4. S.K. Ghosh Advanced General Organic Chemistry (A Modern Approach) (Set I & Ii) NCBA Publisher, New Delhi, 2009
5. B. Viswanathan, P. S. Raghavan; Practical Physical Chemistry, Viva

6. Dr. S. Rattan; Experiments in Applied Chemistry, S. K. Kataria & Sons.
7. J.C. Kuriacose and J. Rajaram; Chemistry in Engineering, Tata McGraw-Hill Publishing Company Limited, New Delhi
8. Dr. S. Rabindra and Prof. B.K. Mishra; Engineering Chemistry, Kumar and Kumar Publishers (P) Ltd. Bangalore-40
9. SS Kumar; A Text Book of Applied Chemistry-I , Tata McGraw Hill, Delhi
10. Dr. G.H. Hugar; Progressive Applied Chemistry –I and II, Eagle Prakashan
11. M. L. Sharma, P.N. Chaudhury, B. R, Khanal, D.R.Paudel; Engineering Practical Chemistry, Ekta Books Distributors.

Paper Code: DCH172   **Credit: 2**
Paper Name: Chemistry-I Lab   **L-T-P: 0-0-2**
Total Contact Hours: NA

Experiment-1: Introduction to chemistry laboratory, precautions, name of common chemicals, apparatus, instruments etc.

Experiment-2: Volumetric analysis and study of apparatus used therein.

Experiment-3: Determine the degree of temporary hardness of water by EDTA titration.

Experiment-4: Determination of solubility of a solid at room temperature.

Experiment-5: To verify the first law of electrolysis (electrolysis of copper sulphate solution using copper electrode).

Experiment-6: Determination of pH of unknown solutions.

Experiment-7: To determine the coefficient of viscosity of the alcohol by using Ostwald's viscometer.

Experiment-8: To determine the surface tension of the given liquid with respect to water at room temperature by using Stalagnometer.

Experiment-9: Preparation of standard solution of Na_2CO_3

Experiment-10: Determination of strength of NaOH by titrating with 0.1 N HCL

Paper Code: DMA103

Credit: 6

Paper Name: Mathematics-I

L-T-P: 3-0-0

Total Contact Hours: 35

Module 1: Algebra

Contact hours: 20

1.1 Vector and Scalar quantities – types of vectors, geometric representation of vectors, addition and subtraction of vectors, magnitude of a vector, product of a vector by a scalar, Module vectors i, j, k.

1.2 Arithmetic and geometric progressions – nth term of A.P. and G.P., Geometric mean between two numbers.

1.3 Complex numbers – origin, general form, polar form, examples. Simple problems.

1.4 Binomial theorem – Factorials, positive integral values, binomial expansion, rules, calculation of appropriate value.

1.5 Logarithm and exponential series.

1.6 Determinants: Definition, operations and Cramer's rule for solving simultaneous linear equations.

1.7 Basic concepts of permutation and Combinations..

Module 2: Trigonometry

Contact hours: 15

2.1 Trigonometric functions and ratios.

2.2 Trigonometric functions of allied angles – half, double, triple, compound angles.

2.3 Addition and subtraction formulae.

2.4 Solution of triangles using properties.

2.5 Simplification of trigonometric expressions using different formulae.

2.6 Basic concept of inverse trigonometric functions and hyperbolic functions.

Books / References:
1. Mathematics for Polytechniques: Vol – I&II, TTTI, Bhopal
2. Mathematics for Polytechniques: S.P. Deshpande
3. Engineering Mathematics: I.B. Prasad
4. Engineering Mathematics: Grewal
5. Plain Trigonometry: Bansilal
6. College Algebra: Shah and Desai
7. Mathematics Textbook for class XI and XII: NCERT

Paper Code: DME104	Credit: 4
Paper Name: Engineering Drawing	**L-T-P: 2-0-0**
Total Contact Hours: 48	

Module 1: Introduction   Contact hours: 5
1.1 Drawing as a medium of communication
1.2 Use and care of Drawing Instruments Assignments: Such as Drawing of Horizontal and
    Vertical Lines, Square, Rectangle
    Mosaic Pattern, Angular Pattern, Stamping with circular pattern.
1.3 Types of Lines and Dimensioning as per 15696/72

Module 2: Geometrical Constructions   Contact hours: 8
2.1 Freehand curves, free hand Drawing
2.2 Construction of triangles, Perpendicular and angles of 300, 450, 600, 900
2.3 Construction of Regular Polygons
2.4 Regular Polygons inscribed in circles.
2.5 Regular figures by using T – square and Set – square

Module 3: Lettering, Scales   Contact hours: 5
3.1 Single Stroke Lettering Straight and Inclined by graph and Free Hand Letters and digits
    as per 15696/72
3.2 Scale- Representative Fraction, Types or Scales
3.3 Simple problems on Plain and Diagonal Scale

Module 4: Projection of Points   Contact hours: 5
4.1 Position / location of Points, Horizontal plane, Vertical plane
4.2 Assignments of Simple problems on different quadrants and Find the distance between
    two points
4.3 Position/ Location of Points

Module 5: Projection of Lines   Contact hours: 5
5.1 Position / location of Points, Horizontal plane, Vertical plane
5.2 Assignments of Simple problems on different quadrants and Find the distance between
    two points
5.3 Position/ Location of Lines

Module 6: Orthographic Projection   Contact hours: 5
6.1 Top View, Front View and Side View of Simple objects, block and machine parts with
    dimensional scale.
6.2 Sectional Front, Top and Side Views as per IS – 696 for simple parts and blocks.

Module 7: Rivet Heads and Joints   Contact hours: 5
7.1 Different types of Rivet Heads and Joints.
7.2 Top and Sectional Front views of Lap and Butt Joints with single double cover plates.

Module 8: Isometric Projection   Contact hours: 5
8.1 Isometric Projection to true scale and isometric scale.

Module 9: Thread/Screwed   Contact hours: 5
9.1 Thread Profiles (REF IS 2043 IS – 554 ETC.)
9.2 Screwed Fastenings
9.3 Representation of external and internal threaded assembly symbolic.
9.4 Representation of threads.
9.5 Representation of Screws, Bolts, Nuts and Cutter.

Books / References:
1. Elementary Engineering Drawing [Plane and Solid Geometry] By N.D. Bhatt, V.M. Panchal.
2. Geometrical and Machine Drawing by N.D. Bhatt

Paper Code: DME174
Paper Name: Engineering Drawing Lab
Total Contact Hours: NA

Credit: 2
L-T-P: 0-0-2

Hands-on experiments related to the course contents of DME104

Paper Code: DPH105
Paper Name: Applied Physics – I
Total Contact Hours: 36

Credit: 6
L-T-P: 2-1-0

Module 1: Units & Dimension

Contact hours: 2

1.1 Need of measurement and Unit in Engineering and Science definition of unit, fundamental and derived quantities and their units, different system of units (CGS and SI), Illustrations.

1.2 Explanation of dimensions of physical quantities, dimensional equations of physical quantities and their uses with examples

Module 2: Basic Mechanics

Contact hours: 12

2.1 Introduction to scalar and vector quantities, representation of vector, addition, subtraction and multiplication of vectors, parallelogram law of vector addition, resolution of vector, dot and scalar product of two vectors (details not required)

2.2 Newton's laws of motion: First law, explanation, definition of force, Concept of Inertia, types of inertia (inertia of rest and inertia of motion), Newton's second law, momentum, impulse, mass & weight, simple problems, Newton's third law, explanation and its examples, Principle of conservation of linear momentum, statement and simple examples (e.g. recoil of a gun), numerical problems

2.3 Circular motion, time period and angular velocity, relation between angular velocity and linear velocity, centripetal and centrifugal force, bending of a cyclist on a curved path, banking of roads and railway track, numerical problems.

2.4 Work, power and energy, its concept, units and dimension, Potential and Kinetic energy, its mathematical relations, Principle of conservation of energy, its proof in case of a free falling body under gravity, numerical problems.

2.5 Simple Harmonic Motion, its geometrical representations and 1derivation of its equations, definition of amplitude, time period, frequency, phase etc., mathematical relations and units, simple pendulum & second's pendulum, numerical problems.

Module 3: Gravity and Gravitation

Contact hours: 3

3.1 Newton's law of gravitation, acceleration due to gravity, relation between 'G' and 'g', their units, variation of the value of g with altitude and depth, Centre of gravity and Centre of mass, Numerical problems

Module 4: Elastic Properties of Solid

Contact hours: 3

4.1 Deforming force, restoring force, Elastic and plastic bodies, explanation of stress and strain with their types, Hook's law, elastic limit, Young's modulus, Bulk modulus, Rigidity modulus, Poisson's ratio, their units and numerical problems.

Module 5: Heat and Thermodynamics

Contact hours: 10

5.1 Concept of heat and temperature, thermometer, different scales of temperatures and their conversion formulae, numerical problems

5.2 Thermal expansion: expansion of solid, linear, superficial and cubical expansion of solid, their coefficients & their relations; Expansion of liquid: co-efficient of Real and Apparent expansion, their relation, variation of density with temperature, Anomalous expansion of water (experimental determination not necessary). Concept of Absolute scale of temperature.

5.3 Calorimetry: Unit of heat, Joule and calorie, Specific heat, thermal capacity and water equivalent.

5.4 Change of state of a body, melting and freezing point, effect of pressure on melting point, latent heat, Evaporation, difference between vaporisation and evaporation, factors on which rate of evaporation depends.

5.5 Transmission of heat, three modes of heat transfer, conduction, convection and Radiation, good and bad conductor of heat, coefficient of thermal conductivity, its S.I. unit and dimension.

5.6 1st law and 2nd law of thermodynamics, Joule's law and Mechanical equivalent of heat.

Module 6 Sound   Contact hours: 6
6.1 Wave Motion: amplitude, time period, frequency and wavelength, relation between velocity, frequency and wavelength. Transverse and longitudinal waves with examples.
6.2 Propagation of sound wave: Expression of velocity of sound in air, Newton's formula and Laplace's correction, Effect of temperature, and pressure on velocity of sound.
6.3 Audible range, ultrasonic and infrasonic sound, application of ultrasonic sound to calculate the depth of ocean.
6.4 Reflection of sound and its application, Echo and reverberation of sound, acoustic of building
6.5 Doppler's effect with Mathematical expressions.

Books / References:
1. Modern Approach to Physics Part I & II, Dilip Sarma, N G Chakraborty,and K N Sharma, Kalyani Publisher, New Delhi.
2. Applied Physics Part I & II, Manpreet Singh, Dr. Major Singh, and Mrs. Hitashi Gupta, S K Kataria & Sons- New Delhi.
3. Basic Applied Physics, R K Gaur, Dhanpat Rai Publication- New Delhi.

Paper Code: DPH175   **Credit: 2**
Paper Name: Applied Physics – I Lab   **L-T-P: 0-0-2**
Total Contact Hours: 18

Experiment-1: Vernier Callipers: To determine the volume of a metallic/wooden cube.

Experiment-2: Screw Gauge: to determine cross sectional area of a wire/ thickness of a glass piece.

Experiment-3: Spherometer: To determine the radius of curvature of concave and convex mirrors.

Experiment-4: To determine the value of acceleration due to gravity (g) of a place with simple pendulum.

Experiment-5: To measure the velocity of sound in resonance tube.

Experiment-6: To determine the frequency of a tuning fork using Sonometer.

Experiment-7: Measurement of Specific gravity of solid, liquid, using Nicolson hydrometer, Hare's apparatus and specific gravity bottles.

Experiment-8: To determine the atmospheric pressure by using Boyle's law apparatus.

Experiment-9: To determine water equivalent of a calorimeter by method of mixture.

Paper Code: DME176   **Credit: 6**
Paper Name: Workshop Practice   **L-T-P: 0-1-4**
Total Contact Hours: 60

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Module 1: Carpentry Shop   **Contact hours: 12**
1.1 Introduction with the shop
1.2 Various structure of wood and types of wood
1.3 Different types of tools, machine and accessories used in Carpentry shop
1.4 Safety Precautions in workshop
    Details of Practical Contents (3+3 hrs)
    Demo of different wood working tools and machines
    Demo of different wood working processes
    Simple joints like T joints etc.
    One simple utility job

Module 2: Fitting Shop   **Contact hours: 12**
2.1 Introduction with the fitting shop
2.2 Various marking, measuring, cutting, holding and striking tools
2.3 Different Operations like chipping, filing, marking drilling etc.
2.4 Working principle of drilling machine, lapping dies etc.
    Details of Practical Contents (3+3 hrs)
    Demo of different fitting tools and machines and power tools
    Demo of different processes in fitting shop
    Squaring of a rectangular metal piece
    One simple utility job.

Module 3: Welding Shop   **Contact hours: 12**
3.1 Introduction
3.2 Types of Welding, Arc Welding, Gas Welding, Gas Cutting
3.3 Welding of dissimilar materials, selection of welding rod material, size of rod and work
    piece
3.4 Different types of flames
3.5 Elementary symbolic Representation
3.6 Safety and precautions
    Details of Practical Contents (3+3 hrs)
    Demo of different welding tools and machines
    Demo of Arc Welding, Gas Welding, Gas Cutter and rebuilding of broken parts with
    welding
     Any one Composite job involving lap joint welding process.

Module 4: Machine Shop   **Contact hours: 12**
4.1 Introduction
4.2 Study of Different types of Lathe machine, shaping machine, Drilling machine
4.3 Study of Different types of hand tools and machine tools and parts
4.4 Safety & precautions
    Details of Practical Contents (3+3 hrs)
    Demo of different machines and their operations
    Preferably prepare a simple job.

Module 5: Turning Shop   **Contact hours: 6**
5.1 Demo of lathe machine, drilling machine
5.2 One job related to plane and taper turning , threading and knurling
5.3 One job related to drilling and tapping

Module 6: Electrical Shop   **Contact hours: 6**
6.1 Demo of simple house wiring and use of tools
6.2 One job related to simple house wiring
6.3 Fittings of cut outs, fuses and other simple fittings etc.

6.4 Difference between Single phase wiring and three phase wiring

Books / References:
1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
2. Kalpakjian S. And Steven S. Schmid, "Manufacturing Engineering and Technology", 4th edition, Pearson Education India Edition, 2002.
3. Gowri P. Hariharan and A. Suresh Babu," Manufacturing Technology – I" Pearson Education, 2008.
4. Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998
5. Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House, 2017

Paper Code: DHSS271   Credit: 2
Paper Name: Communication in English Lab   L-T-P: 0-0-2
Total Contact Hours: 39

Module 1: Speaking and Listening practices   Contact hours: 16
1.1 Practices of sounds of English
1.2 Proper Body language while speaking
1.3 Presentation and public speaking practices
1.4 Practicing to enhance listening skills
1.5 Different types of listening
1.6 Good listening practices
1.7 Overcoming barriers to effective listening

Module 2: Business Writing   Contact hours: 3
2.1 Letter Writing Formal letter formats.
2.2 Practice of letter writing in different situations: Order letter, Complaint letter, Letter of Adjustment, Quotation letter, Letter to the Editor, Application for leave of absence.
2.3 Job Application and Cover Letter, format of a job application.
2.4 Resume, Curriculum Vitae, bio data.

Module 3: Paragraph Writing and Summary Writing   Contact hours: 5
3.1 Definition, Cohesion and Linkage using Transition words on everyday topics.
3.2 Practicing how to compose coherent passages.
3.3 Definition, Use of Transition words, important points to remember while summarizing.
3.4 Explain and practicing how to arrive at a summary of a paragraph / text.

Module 4: Email Writing   Contact hours: 5
4.1 Writing the perfect e-mail,
4.2 Steps to the perfect e-mail, formal and informal greetings, requests through an e-mail, writing an apology, complaint and seeking help and information in an e-mail.
4.3 Informing about a file attached in in an email, writing the formal ending of an e-mail.
4.4 Explaining and practicing how to write formal and informal emails.

Module 5: Report writing   Contact hours: 2
5.1 Definition, types of reports with a focus on annual report, non-profit annual report, technical and academic report.
5.2 Necessity and purpose of writing a report, qualities of a good report.
5.3 Language used in a report.
5.4 Different formats of reports and sample reports.

Module 6: Facing an interview   Contact hours: 5
6.1 How to approach, what to speak, how to speak in an interview and answer interview questions, the business etiquettes to maintain
6.2 Body language, negative body language, handling an awkward situation in an interview, the dress code
6.3 Successful job interview practices
6.4 Perfect handshake, points to remember while applying for a job

Module 7: British English and American English   Contact hours: 3
7.1 Difference between American and British English words – vocabulary and spelling
7.2 Pronunciation and accents

Books / References:
1. Student's handbook of Written English and Phonetics by Dr Papori Rani Barooah (Eastern Book House Publishers)
2. Strengthening your writing -V.R. Nayaranswami (Orient Longman)

Paper Code: DCSE202
Paper Name: Computer Fundamentals and Programming
Total Contact Hours: 35

Credit: 4
L-T-P: 2-0-0

Module 1: Computer Fundamentals
Contact hours: 10

1.1 Brief history.
1.2 Block diagram and different components.
1.3 Memory & it's different types.
1.4 I/O devices.
1.5 Introduction to Operating System, Types and Role of OS.
1.6 Computer languages, translator software, editor.
1.7 Data, different types of data, information and its characteristics.
1.8 Introduction to computer network and the Internet.

Module 2: Number System and codes
Contact hours: 10

2.1 Different number systems - decimal, binary, octal, hexadecimal number system.
2.2 Number Conversions.
2.3 1's and 2's Complement, subtraction using complements.
2.4 Different codes- ASCII, BCD, Ex-3, Gray.
2.5 Conversion from Gray to binary and vice-versa.
2.6 BCD Addition.

Module 3: Introduction to C programming
Contact hours: 15

3.1 Fundamentals of Programming-Algorithm & Flowchart.
3.2 Source code and object code.
3.3 Basic structure of C programs.
3.4 Executing a C program.
3.5 C Tokens, Keywords and Identifier, Constants, Variables, Storage Class and Data types.
3.6 Operators and expression.
3.7 Input Output functions like printf, scanf, getchar, putchar, gets, puts
3.8 Decision making and branching using IF..Else, Switch.
3.9 Looping using for, while, and do-while.
3.10 Array.

Books / References:

1. Computer Fundamentals Paperback by Priti Sinha Pradeep K.Sinha (Author), BPB Publication
2. Byron Gottfried, "Programming with C", Tata McGraw Hill.
3. Herbert Schildt, "The complete Reference C", TMH
4. Balagurusamy, E. (2019). *Programming in ANSI C, 8/e*. McGraw-Hill Education.
5. YashwantKanetkar, "Let us C", BPB Publication
6. Henrry Mulish, Herbert L. Cooper, "The Spirit of C: An Introduction to Modern Programming", Jaico Books.
7. Briain W. Kenigham and Dennis Ritchie, "C Programming language", Prentice Hall of India.

Paper Code: DCSE272   **Credit: 2**
Paper Name: Computer Fundamentals and Programming Lab   **L-T-P: 0-0-2**
Total Contact Hours: 32

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Module 1: Basic Commands for Computer System   **Contact hours: 2**

Module 2: Preparation of Documents   **Contact hours: 6**
 2.1 Introduction to Word processing: Opening a document, preparing documents, inserting
      diagrams and tables.
 2.2 Editing document- (a) Character, word and line editing, (b) Margin Setting, Paragraph
      alignment, (c) Block Operations, (d) Spell Checker, (e) Saving a document, (f) Mail
      merge.

Module 3: Information Presentation through Spreadsheet   **Contact hours: 8**
3.1 Application of Spreadsheet.
3.2 Structure of spreadsheets.
3.3 Preparing table for simple data and numeric operations.
3.4 Using formulae and functions in excel operations, Creation of graphs, Pie charts, bar
charts.

Module 4: Preparation of presentation   **Contact hours: 6**
4.1 Creation of electronic slides on any topic
4.2 Practice of animation effect
4.3 Presentation of slides

Module 6: Programming in C   **Contact hours: 10**
 5.1 Editing a C program.
 5.2 Defining variables and assigning values to variables.
 5.3 Arithmetic and relational operators, arithmetic expressions and their
      evaluation.
 5.4 Practice on input/output functions like getchar, putchar, gets, puts, scanf, printf
      etc.
 5.5 Programming exercise on simple if statement, If..else statement, switch
      statement.
 5.6 Programming exercise on looping with do-while, while, for loop.
 5.7 Programming exercise on array.

Books / References:
1. Foundations of Information Technology Coursebook 9: Windows 7 and MS Office 2007 (With MS Office
    2010 Updates)-Sangeeta Panchal,Alka Sabharwal
2. Microsoft Office 2016 Step by Step by Joan Lambert and Curtis Frye
3. Herbert Schildt, "The complete Reference C", TMH
4. YashwantKanetkar, "Let us C", BPB Publication
5. Balagurusamy, E. (2019). Programming in ANSI C, 8/e. McGraw-Hill Education.
6. Henrry Mulish, Herbert L. Cooper, "The Spirit of C: An Introduction to Modern Programming", Jaico Books.
7. Briain W. Kenigham and Dennis Ritchie, "C Programming language", Prentice Hall of India.

Paper Code: DEE203   **Credit: 6**
Paper Name: Fundamentals of Electrical & Electronics Engineering   **L-T-P: 2-1-0**
Total Contact Hours: 34

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Module 1: Introduction   Contact hours: 2
1.1 Sources of energy; General structure of electrical power systems, Power transmission and distribution via overhead lines and underground cables.

Module 2: DC circuits   Contact hours: 8
2.1 Definitions of active, passive, linear, non-linear circuits elements and networks, Kirchoff's laws, Nodal and mesh analysis, voltage and current sources, network theorems, superposition. Thevenin's, Norton's, maximum power transfer, Millman's, and reciprocity theorems, analysis of simple circuits with DC excitation.

Module 3: Single phase AC circuits   Contact hours: 10
3.1 Generation of single phase sinusoidal EMF, instantaneous, average and effective value, form and peak factor, examples of other alternating waveforms and average and effective value calculations, concept of phasor and phasor diagrams, lagging and leading of phasors, pure resistive, inductive and capacitive circuits, power factor, complex power, R-L, R-C and R-L-C series circuits, parallel AC circuits, series and parallel resonance.

Module 4: Semiconductor Devices: Contact hours: 4
4.1 Review of atomic structure, Intrinsic and Extrinsic semiconductors, current carriers in semiconductors, P-type and N-type materials, P-N junction, biasing, characteristic curve, load line, Zener diode. Special semiconductor devices (Qualitative only) – tunnel diode, backward diode, varactor and PIN diode, their construction, operation and applications.

Module 5: Bipolar transistor (Qualitative only)   Contact hours: 3
5.1 Construction and schematic representation of PNP and NPN transistors, formation of PNP / NPN junctions, energy band diagram; transistor mechanism and principle of transistors.

Module 6: Bipolar transistor (Qualitative only)   Contact hours: 2
6.1 Different types of biasing system, bias stabilisation, analysis of CE, CB & CC configuration, their I/P & O/P characteristics, transistor rating and specifications.

Module 7: Rectifier Circuits   Contact hours: 3
7.1 Half wave and full wave rectifier (Qualitative only): ripple factor, rectification efficiency, Peak Inverse Voltage. Filtering (passive) and voltage regulation (Qualitative only): Capacitor filter, Inductor filter, 'T' filter, 'π' filter. Zener as voltage regulator.

Module 8: Cathode Ray Oscilloscope   Contact hours: 2
8.1 Construction features of cathode ray tube, concept of dual beam CRO; application of CRO for different electrical measurements: amplitude frequency and phase of sine wave, Lissajous figure.

Books / References:
1. D.P. Kothari & I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
3. B.L. Thereja, A.K. Thereja, "A Textbook of Electrical Technology", S.Chand
4. Jacob Millman, "Electronics Devices & Circuits", McGraw Hill Education; 4 editions (2015).
5. Boyestad & Nashelsky, "Electronics Devices and circuit theory", Pearson Education India; 11th edition (2015).
6. S. Salivahanan & N. Suresh Kumar, "Electronic Devices and Circuits", McGraw Hill Education; Fourth edition (2017).
7. Albert Malvino & David Bates, "Electronic Principles", Tata McGraw Hill Publication, 2010.
8. A.K. Maini, "Analog Circuits", Khanna Publishing House, Ed. 2018.

Paper Code: DEE273 **Credit: 2**
Paper Name: Fundamentals of Electrical & Electronics Engineering Lab **L-T-P: 0-0-2**
Total Contact Hours: 16

Experiment-1: Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, rheostat and wattmeter.

Experiment-2: Make a measured resistance from a given rheostat.

Experiment-3: Verification of Kirchhoff's laws.

Experiment-4: Verification of Superposition theorem.

Experiment-5: Verification of Thevenin's theorem.

Experiment-6: P-N Junction.

Experiment-7: Half-wave rectifier circuit.

Experiment-8: Full-wave rectifier circuit.

Experiment-9: V- I characteristics of transistors.

Experiment-10: Wiring.

Paper Code: DMA204   **Credit: 8**
Paper Name: Mathematics-II   **L-T-P: 3-1-0**
Total Contact Hours: 40

Module 1: Calculus-I   **Contact hours: 16**
a. Differential Calculus
1.1 Sets: Definition, types and operation on Sets.
1.2 Relation: Definition, domain and range, equivalence relation.
1.3 Functions: definition, types of functions.
1.4 Limits: Concept and evaluation of limits, indeterminate forms, L'Hospital's Rule.
1.5 Differentiation: Differentiation by first principle. Differentiation of sum, product and quotient, function of function, Chain rule. Differentiation of trigonometric, inverse trigonometric, hyperbolic, logarithmic and parametric functions, applications.
1.6 Basic concepts of partial differentiation.
b. Integral Calculus
1.7 Integration: Definition and fundamental properties.
1.8 Methods of integration – integration by substitution, by parts, partial fractions
1.9 Applications

Module 2: Statistics   **Contact hours: 10**
2.1 Measures of Central Tendency: Mean,Median and Mode and empirical relationship between them and related problems.
2.2 Measures of Dispersion: Range, Mean Deviation, Standard Deviation, Quartile deviation.
2.3 Correlation

Module 3: Co-ordinate Geometry   **Contact hours: 14**
3.1 Co-ordinate Systems, Cartesian and polar co-ordinates, distance between two points, section formula, area of triangle, collinearly and co-planarity.
3.2 Straight Line: Definition, general and standard form of equations, intersection of straight lines: angle between them, bisector of angle between them.
3.3 Change of co-ordinate axes, shifting of origin and rotation of axes.
3.4 Circle: Standard equations and simple problems, tangent and normal.
3.5 Basic idea of parabola, ellipse and hyperbola, their standard equations and basic properties.

Books / References:
1. Mathematics for Polytechniques, TTTI, Bhopal, Latest Edition.
2. Mathematics for Polytechniques, S. P. Deshpande, Latest Edition.
3. Engineering Mathematics, I.B. Prasad, Latest Edition.
4. A text Book Matrices, Shanti Narayan, S. Chand & Co. New Delhi, 1998
5. Introduction to Statistics, L. Choudhury, KitapGhar, Guwahati. Latest Edition.
6. Fundamental of Statistics, Kapoor & Gupta, Latest Edition.
7. Mathematics Textbook for class XI and XII, NCERT, Latest Edition.

Paper Code: DME205
Paper Name: Engineering Mechanics
Total Contact Hours: 41

Credit: 6
L-T-P: 3-0-0

Module 1: Forces and Moments

Contact hours: 12

1.1 Force, Moment and Couple, Resultant of forces, Forces in space.
1.2 Equilibrium, FBD, General equations of equilibrium

Module 2: Friction

Contact hours: 8

2.1 Introduction to dry friction. Laws of friction, friction of simple machines- inclined planes, Screw jacks.

Module 3: Center of gravity and moment of inertia

Contact hours: 8

3.1 Center of gravity of axes, volume and composite bodies: Area moment of inertia and mass moment of inertia for plane figures and bodies.

Module 4: Center of gravity and moment of inertia

Contact hours: 5

4.1 Linear and circular motion, Linear and angular velocities and acceleration,
4.2 Units relation in between centrifugal force, Its uses in Engineering problems.
4.3 Angle of banking super elevation problems. Bodies moving on a level circular path, skidding, overturning.

Module 5: Work, Power and Energy

Contact hours: 3

5.1 Work, power and Energy definition and application
5.2 Potential and kinetic energy-definition and Units and their Engineering problems.

Module 6: Simple Lifting Machines

Contact hours: 5

6.1 Definition and importance of Simple Machines.
6.2 Law of Machine, problems. Simple lifting Machines –simple Wheel and axle, differential wheel and axle and screw jack (simple) problems.
6.3 Definition M.A, V.R and efficiency and their relationship. Simple problems

Books / References:
1. Engineering Mechanics: S Timoshenko & D H Young. McGrow Hill Int.
2. Engineering Mechanics: R S Khurmi. S Chand & Co.
3. Engineering Mechanics: R K Bansal. Laxmi Publication (P) Ltd
4. Engineering Mechanics: K L Kumar. McGrow Hill Publishing Co.
5. Irving H. Shames (2006), Engineering Mechanics, 4th Edition, Prentice Hall
6. F. P. Beer and E. R. Johnston (2011), Vector Mechanics for Engineers, Vol I –Statics, Vol II, – Dynamics, 9th Ed, Tata McGraw Hill
7. R.C. Hibbler (2006), Engineering Mechanics: Principles of Statics and Dynamics, Pearson Press

Paper Code: DPH206
Paper Name: Applied Physics – II
Total Contact Hours: 36

Credit: 6
L-T-P: 2-1-0

Module 1: Light
Contact hours: 5

1.1 Reflection, Reflection on spherical mirror, idea of real and virtual image, mirror formula, sign conventions (mirror formula to be assumed), nature size and position of images of different positions of objects, numerical problems.

1.2 Refraction, refractive index, critical angle, total internal reflection, between critical angle and refractive index, Prism, refraction through prism, minimum deviation, numerical problems. Lens, refraction through lens (lens formula to be assumed of a lens), numerical problems.

Module 2: Electrostatics
Contact hours: 3

2.1 Concept of Electric charge according to modern electron theory, unit of charge, Inverse square law, electric field, Electric line of force, electric intensity

2.2 Potential at a point due to a point charge, relation between intensity and potential with deduction of the formula

2.3 Capacity of a condenser, series and parallel combination, different type of condenser, numerical problems.

Module 3: Current Electricity
Contact hours: 11

3.1 Potential difference and electric current with their units.

3.2 Difference between emf. and potential difference; internal resistance of cell. Voltaic cell; defects of cell: local action and polarization and their removal.

3.3 Difference between primary and secondary cells with examples, grouping of cells, series, parallel and mixed combinations of cells.

3.4 Basic D.C. Circuits: Ohm's Law and its verification, mathematical expression, Kirchoff's Law, numerical problems.

3.5 Definition of resistance, conductance, effects of temperature on resistance, Series and parallel combination of resistance, resistance per unit length, numerical problems.

3.6 Heating Effect of Current: Joule's law, electricity energy and power, numerical problems

3.7 Thermoelectric effect: Thermocouple, Seebeck effect, Peltier effect and Thomson effect.

3.8 Chemical effect of current: electrolysis, Faradays's laws of electrolysis

Module 4: Magnetism
Contact hours: 5

4.1 Nature and artificial magnets theories, different types of magnets, induced magnetism, nature of polarities.

4.2 Inverse square law, magnetic intensity at end – on and broad – side on position, uniform and non – uniform field, magnetic moment, couple on a magnet in a uniform field, Tangent law.

4.3 Elements of terrestrial magnetism

Module 5: Electromagnetism
Contact hours: 4

5.1 Magnetic effect of current, nature of magnetic field due to straight and circular conductor, due to solenoid, Fleming's left and right hand rules, effect of current following through two parallel conductors.

5.2 Electro Magnetic induction: e. m. f. induced in a coil due to magnet, Faraday' s laws of electro – magnetic induction, Lenz Law, self and mutual induction.

Module 6: Modern Physics
Contact hours: 4

6.1 Photo Electric Emission: explanation and demonstration of photo electric current, photo electric equation with its physical signification.

6.2 Nuclear Energy: Atomic mass unit, mass energy equivalence, mass defect

6.3 X- rays: Properties and its application in industry (Production apparatus not necessary)

6.4 Radio – activity: Natural and artificial radioactivity, emission of alpha, beta and gamma radiation, their properties and uses.

Module 7: Electronics   Contact hours: 2
7.1 Thermionic emission: vacuum tube, diode and triode, their working principle, concept of rectifier and amplifier, use of diode as rectifier.

Module 8: Semi-conductor Physics   Contact hours: 2
8.1 Concept of semiconductors, properties and basic principle, intrinsic and extrinsic semiconductor, p-type and n-type semiconductor.

Books / References:
1. Modern Approach to Physics Part I & II, Dilip Sarma, N G Chakraborty,and K N Sharma, Kalyani Publisher, New Delhi.
2. Applied Physics Part I & II, Manpreet Singh, Dr. Major Singh, and Mrs. Hitashi Gupta, S K Kataria & Sons- New Delhi.
3. Basic Applied Physics, R K Gaur, Dhanpat Rai Publication- New Delhi

Paper Code: DPH276   **Credit: 2**
Paper Name: Applied Physics – II Lab   **L-T-P: 0-0-2**
Total Contact Hours: 20

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Experiment-1 To verify the laws of reflection using a plane mirror and to study the characteristics of image formed.

Experiment-2: To determine the refractive index of the material of the glass slab by pin method.

Experiment-3: To determine the focal length of a convex lens by U-V method.

Experiment-4: To determine the focal length of a convex lens by plane mirror method.

Experiment-5: To draw I-D curve and to determine the refractive index of the material of a prism.

Experiment-6: To locate the poles of a bar magnet and to measure the magnetic length.

Experiment-7: To plot magnetic lines of force of a bar magnet with north pole pointing north and to locate the neutral point/to plot magnetic lines of force of a bar magnet with south pole pointing north and to locate the neutral point.

Experiment-8: To verify Ohm's law by Ammeter-voltmeter method.

Experiment-9: To find equivalent resistance using voltmeter with I. Three resistances connected in series II. Three resistances connected in parallel.

Experiment-10: To measure the unknown resistance of the material of a wire by meter bridge using Wheatstone bridge principle.

Semester III

Paper Code: DCSE301
Paper Name: Computer Architecture and Organization
Total Contact Hours: 42

Credit: 8
L-T-P: 3-1-0

Module 1: Introduction to Computer Architecture   **Contact hours: 6**
1.1 Stored program concept — Von Neumann architecture (definition only)
1.2 Functional units, Bus structure
1.3 Brief introduction to logic gates, flip-flop, encoder/decoder, multiplexer, half adder/full adder

Module 2: Number Representation   **Contact hours: 6**
2.1 Signed numbers
2.2 Fixed point and floating point representation
2.3 Complements, various Arithmetic operation (with signed magnitude & floating point numbers)
2.4 Booth's algorithm

Module 3: Basic Computer Organisation and Design   **Contact hours: 7**
3.2 Instruction codes, Computer registers
3.3 Computer instructions, Timing and Control, Instruction cycle
3.4 Memory-Reference Instructions
3.5 Input-output and interrupt
3.6 Complete computer description
3.7 Design of Basic computer, design of Accumulator Unit

Module 4: Central Processing Unit   **Contact hours: 9**
4.1 Component of ALU (in block diagram only)
4.2 General Register organisation
4.3 Stack organisation, Instruction format
4.4 Different types of Instructions, addressing modes
4.5 Hardware control unit- its different functions
4.6 Microprogrammed control unit – control memory, micro program example, design of control unit.

Module 5: Memory Organisation   **Contact hours: 7**
5.1 Concept of bits, bytes and words
5.2 Storage of numbers and characters
5.3 Memory hierarchy, Main memory, Auxiliary memory, Associative memory, Cache memory, Virtual memory

Module 6: Input-Output Organisation   **Contact hours: 7**
6.1 Various I/O devices
6.2 Input-output interface
6.3 Asynchronous Data Transfer
6.4 Mode of Transfer, Priority interrupt
6.5 DMA, Input output processor

Books / References:
1. Computer System Architecture – by Mano, PHI
2. Computer Organisation& Architecture – by Stallings, PHI
3. Computer Organisation – by Carl Hamacher, ZvonkoVranesic and SafwatZaky, MGH

Paper Code: DCSE302   **Credit: 6**
Paper Name: System Programming   **L-T-P: 3-0-0**
Total Contact Hours: 40

Module 1: Assembly Language   **Contact hours: 6**
1.1 Introduction to Assembly Language
1.2 Description of functional Characteristics, addressing modes
1.3 Data types and instruction structure
1.4 Registers
1.5 Indexing
1.6 Instruction set description

Module 2: Macros   **Contact hours: 4**
2.1 Recursive macros
2.2 Sub routines
2.3 Stacks, procedures, exception handling

Module 3: Assemblers   **Contact hours: 8**
3.1 Overview of assembly, assembly processes
3.2 Processing of imperative, declarative and assembler directive statements
3.3 Relocation, linking and loading concepts
3.4 One and Two Pass assembler
3.5 Symbol table organization, program sections, output forms

Module 4: Macro Assembler   **Contact hours: 6**
4.1 Macro definitions and parameters
4.2 Macro call Expansion
4.3 Macro definition and macro call within a macro
4.4 Conditional assembly macro processor

Module 5: Loaders   **Contact hours: 6**
5.1 Review of loading, linking and relocation
5.2 Absolute, dynamic and direct loading schemes
5.3 Program linking schemes and relocation of external references
5.4 Optional features in loaders and linking editors
5.5 Overlay structures and dynamic loading

Module 6: Compiler Construction   **Contact hours: 10**
6.1 Introduction to Compiler
6.2 Phases and passes, Bootstrapping
6.3 Lexical Analysis
6.4 Syntax analysis
6.5 Bottom Up and Top Down parsers
6.6 Translation
6.7 Code Optimization
6.8 Code Generation

Books / References:

1. Systems Programming by DmDhamdhere, Tata McGraw-Hill Education.
2. Systems Programming by Donovan, Tata McGraw-Hill Education.

Paper Code: DCSE372　　　　　　　　　　　　　　　　　**Credit: 3**
Paper Name: System Programming Lab　　　　　　　　**L-T-P: 0-0-3**
Total Contact Hours: 30

Basics of Unix: Introduction, Unix Architecture, Files and Directories Management, Environment, Basic Utilities, Pipes and Filters, Processes, Text Editors, Shell and Basics of Shell Scripting.

NASM Assembler: Introduction, Installation and Environmental Setup

Assembly Language: Basic Syntax, Memory Segments, Registers, System Calls, Addressing Modes, Variable, Constants, Arithmetic Instructions, Logical Instructions, Conditions, Loops, Numbers, String, Arrays, Procedure, Recursion, Macros, File & Memory Management

Assembly Language programs that demonstrate all the above

Lex and Yacc: Writing basic compiler using Lex and yacc

Books / References:
1. Das, S. (2000). UNIX, Concepts and Applications. Tata McGraw-Hill.
2. Das, S. (2012). Your UNIX/Linux: The Ultimate Guide. McGraw-Hill
3. Duntemann, J. (2000). Assembly language step-by-step: programming with DOS and Linux. John Wiley & Sons.

Paper Code: DECE303   **Credit: 6**
Paper Name: Digital Electronics   **L-T-P: 3-0-0**
Total Contact Hours: 30

Module 1: Number Systems & Boolean Algebra   **Contact hours: 4**
1.1 Introduction to different number systems – Binary, Octal, Decimal, Hexadecimal
1.2 Conversion from one number system to another
1.3 Boolean variables – Rules and laws of Boolean Algebra De-Morgan's Theorem
1.4 Karnaugh Maps and their use for simplification of Boolean expressions

Module 2: Logic Gates   **Contact hours: 6**
2.1 Logic Gates – AND, OR, NOT, NAND, NOR, XOR, XNOR: Symbolic representation and truth table
2.2 Implementation of Boolean expressions and Logic Functions using gates. Simplification of expressions

Module 3: Combinational Logic Circuits   **Contact hours: 6**
3.1 Arithmetic Circuits – Addition, Subtraction 1's 2's Complement, Half Adder, Full Adder, Half Subtractor, Full Subtractor, Parallel and Series Adders, Encoder, Decoder
3.2 Multiplexer – 2 to 1 MUX, 4 to 1 MUX, 8 to 1 MUX.
3.3 Applications Demultiplexer – 1 to 2 DEMUX, 1- 4 DEMUX, 1- 8 DEMUX problems

Module 4: Sequential Logic Circuits   **Contact hours: 6**
4.1 Flip Flops – SR, JK, T, D, FF, JK-MS, Triggering
4.2 Counters – 4 bit Up – Down Counters, Asynchronous/ Ripple Counter, Decade Counter- Mod 3, Mod 7 Counter, Johnson Counter, Ring Counter
4.3 Registers – 4bit Shift Register: Serial In Serial Out, Serial in Parallel Out, Parallel In Serial Out, Parallel In Parallel Out

Module 5: Memory Devices   **Contact hours: 8**
5.1 Classification of Memories – RAM Organization, Address Lines and Memory Size, Static RAM, Bipolar RAM, cell Dynamic RAM, D RAM, DDR RAM
5.2 Read Only memory – ROM organization, Expanding memory, PROM, EPROM, EEPROM, Flash memory
5.3 Data Converters – Digital to Analog converters, Analog to Digital Converters

Books / References:
1. Digital principles & Applications: Albert Paul Malvino & Donald P. Leach McGraw Hill Education; Eighth edition (ISBN: 978-9339203405)
2. Digital Electronics: Roger L. Tokheim & Macmillian McGraw-Hill Education (ISE Editions); International 2 Revised ed edition (ISBN: 978-0071167963)
3. Digital Electronics – an introduction to theory and practice: William H. Gothmann Prentice Hall India Learning Private Limited; 2 edition (ISBN: 978-8120303485)
4. Fundamentals of Logic Design: Charles H. Roth Jr. Jaico Publishing House; First edition (ISBN: 978-8172247744)
5. Digital Electronics: R. Anand Khanna Publications, New Delhi (Edition 2018) ISBN: 978-93-82609445

Paper Code: DECE373   **Credit: 2**
Paper Name: Digital Electronics Lab   **L-T-P: 0-0-2**
Total Contact Hours: 2 Hours/Week

Hands-on experiments related to the course contents of DECE303

Paper Code: DMA301 **Credit: 6**
Paper Name: Mathematics-III **L-T-P: 3-0-0**
Total Contact Hours: 40

Module 1: Matrices **Contact hours: 8**
1.1 Definition, Operation of matrices.
1.2 Special Matrices – Square, diagonal, row, column, zero or null, unit matrix, upper and lower triangular, symmetric and skew – symmetric matrices.
1.3 Adjoint of a matrix, inverse of a matrix, finding inverse using adjoints and elementary transformations.
1.4 Rank of a matrix.
1.5 Solution of simultaneous linear equations.

Module 2: Ordinary differential equations (ODE) **Contact hours: 20**

First Order ODE
2.1 Formation of differential equations.
2.2 Separable equations.
2.3 Equations reducible to separable form.
2.4 Exact equations.
2.5 Integrating factors
2.6 Linear first order equations; Bernoulli equation.
2.7 Orthogonal Trajectories.
Second Order ODE
2.8 Homogenous linear equations of arbitrary order with constant coefficients.
2.9 Non homogenous linear equations with constant coefficients.
2.10 Euler's and Cauchy's equations.
2.11 Method of variation of parameters.
2.12 System of linear differential equations.

Module 3: Vector Calculus **Contact hours: 12**
3.1 Introduction to vector Calculus.
3.2 Scalar field and victor field.
3.3 Derivative and integration of vector functions.
3.4 Partial derivative of vectors.
3.5 Directional derivatives.
3.6 Tangent plane and normal to a level surface.
3.7 Gradient, divergence and curl.

Books / References:
1. S.S. Sastry, Prestice Hall of India, New Delhi Ed. 1994, Engineering Mathematics Vol-I
2. Thomas & Finnery, Narosa Publishing Co. New Delhi, Ed. 1999, Calculus and Analytical Geometry
3. B.S. Grewal, Krishna Publishers, New Delhi, Ed. 1999, Higher Engineering Mathematics
4. Murray R. Spiegel and Seymour Lipschutz, Mcgraw Hill, (Schaum's Outlines Series), 2nd edition 2009, Vector Analysis
5. Bhu Dev Sharma, Kedar Nath Ram Nath, Latest Ed., Differential Equations
6. Dr. M. D. Raisinghania, S. Chand, 19th Edition, Ordinary and partial Differential Equations
7. Shepley L. Ross, Wiley, Third Edition (Wiley Student Edition), Differential Equations

Paper Code: DHSS302   **Credit: 8**
Paper Name: Engineering Economics and Accountancy   **L-T-P: 3-1-0**
Total Contact Hours: 52

Part-A Engineering Economics

Module 1: Introduction to Economics   **Contact hours: 4**
1.1 Definition of Economics, Its utility and scope of the Study.
1.2 Definition of Engineering Economics
1.3 Meaning and concepts of Utility, Consumption, value, price, Goods and National income, Inflation.
1.4 Wants, Definition and Characteristics
1.5 Wealth and Welfare – Definition, meaning and types.

Module 2: Demand and Supply   **Contact hours: 6**
2.1 Meaning and types of Demand
2.2 The law of Demand, its limitations
2.3 Preparation of Demand Schedule
2.4 Meaning of Supply
2.5 The law of supply, its limitations
2.6 Preparation of supply schedule

Module 3: Production   **Contact hours: 4**
3.1 Meaning and factors of Production
3.2 Factors determining efficiency of labour
3.3 Saving, investment and capital formation
3.4 Meaning of Production Function

Module 4: Money   **Contact hours: 3**
4.1 Meaning of Money
4.2 Types of Money
4.3 Functions of Money

Module 5: Banking Organisation   **Contact hours: 3**
5.1 Central Bank – its functions
5.2 Commercial Banks – its functions

Module 6: Pricing   **Contact hours: 4**
6.1 Objective of Pricing Policy
6.2 Price determinants
6.3 Price discrimination

Part-B Accountancy

Module 7: Introduction to Book Keeping and Accountancy   **Contact hours: 5**
7.1 Definition and objectives of Book Keeping
7.2 Need and Advantages of Book Keeping
7.3 Definition of Accounting
7.4 Difference between book keeping and accounting
7.5 Double Entry Systems – main features
7.6 Advantage and dis advantages of Double Entry System

Module 8: Introduction to Computerised Accounting System   **Contact hours: 3**
8.1 Components of Computerised Accounting Software
8.2 Need for Computerised Accounting
8.3 Difference between computerised Accounting and Manual Accounting

Module 9: Transaction   **Contact hours: 3**

9.1 Definition
9.2 Meaning of Account
9.3 Classification of Accounts: Traditional Approach and Modern Approach
9.4 Meaning of Debit and Credit
9.5 Rules of Debit and Credit

Module 10: Journal and Ledger   Contact hours: 5
10.1 Meaning of Journal
10.2 Recording of Transaction in Journal
10.3 Meaning of Ledger
10.4 Objective and Utility of Ledger
10.5 Posting and Balancing of Ledger
10.6 Distinction between Journal and Ledger
10.7 Names of Different Books of Accounts

Module 11: Cash Book   Contact hours: 5
11.1 Meaning and Importance of Cash Book
11.2 Characteristics and Advantages of Cash Book
11.3 Discount – Trade Discount and Cash Discount
11.4 Different Types of Cash Book: Single column cash book, Double column Cash Book
     and Triple column Cash book
11.5 Bank Reconciliation Statement – Basic Idea

Module 12: Trial Balance and Error in Accounting   Contact hours: 3
12.1 Meaning and Objects of Trial Balance
12.2 Main features and Advantage of Trial Balance
12.3 Preparation of Trial Balance
12.4 Types of Error in Accounting
Module 13: Components of Final Accounts   Contact hours: 4
13.1 Meaning and objectives of Trading Account
13.2 Contents of Trading Account
13.3 Meaning and objectives of Profit and Loss Account
13.4 Contents of Profit and Loss Account
13.5 Meaning of Depreciation, revenue expenditure and capital expenditure
13.6 Contents of Balance Sheet

Books / References:

1. Introductory Micro Economics- Sandeep Garg- Dhanpat Rai Publication Pvt. Ltd. New Delhi.
2. Introductory Macro Economics- Sandeep Garg- Dhanpat Rai Publication Pvt. Ltd. New Delhi.
3. Theory and Practice of Accountancy-B.B. Dam, R.A. Sarda, R. Barman, B. Kalita-Capital Publishing Company, Guwahati-5.
4. Book-Keeping & Accountancy- Juneja. Chawla &Saksena- Kalyani Publisher, New Delhi-110002.
5. Tally. ERP 9 for Beginners- Tally Solutions Pvt. Ltd.- Sahaj Enterprises, Bangalore.

Semester IV

Paper Code: DCSE401   **Credit: 8**

Paper Name: Data Structure using C   **L-T-P: 3-1-0**

<u>**Total Contact Hours: 42**</u>

Module 1: Introduction to Data Structure   **Contact hours: 2**

1.1 Introduction

1.2 Basic Terminology

1.3 Elementary Data Organization

1.4 Data Structures

1.5 Data Structure Operations

1.6 Algorithms, Complexity, Time-space Trade off

Module 2: Preliminary Concept   **Contact hours: 3**

2.1 Mathematical notations and functions

2.2 Algorithm Notations

2.3 Control Structures

2.4 Complexity of Algorithms

2.5 Asymptotic notations

2.6 Sub Algorithms

2.7 Variables, Data types

Module 3: String Processing and Terminology   **Contact Hours: 2**

3.1 Introduction to String

3.2 Basic Terminology

3.3 Storing Strings

3.4 Character Data Types

3.5 String Operation

3.6 Word Processing

3.7 Pattern Matching Algorithms

Module 4: Concept of Arrays, Records and Pointers   **Contact Hours: 4**

4.1 Introduction to Array

4.2 Linear Arrays

4.3 Representation of Linear Arrays in memory

4.4 Traversing Linear Array

4.5 Inserting and Deleting

4.6 Multidimensional Array

4.7 Pointers, pointer Array

4.8 Record and Its Structure

4.9 Representation of Records in Memory

4.10 Matrices, Spares Matrices

Module 5: Introduction to Linked List   Contact Hours: 5

5.1Introduction to Linked Lists

5.2 Representation of Linked List in Memory

5.3 Traversing a Linked List

5.4 Searching a linked list

5.5 Memory Allocation, Garbage Collection

5.6 Insertion into a linked list

5.7 Deletion form a linked list

5.8 Header Linked list, Circular Linked List

5.9 Two-Ways Lists

Module 6: Concept of Stacks, Queues, Recursion   Contact Hours: 6

6.1 Stacks

6.2 Array Representation of Stacks

6.3 Arithmetic Expression, Polish Notation

6.4 Application of stacks

6.5 Recursion

6.6 Towers of Hanoi

6.7 Implementation of Recursive Procedures of stacks

6.8 Queues

6.9 Deques

6.10 Priority Queues

6.11 Application of Queues

Module 7: Concept of Treeand Tree Traversal   Contact Hours: 9

7.1 Introduction to Trees

7.2 Binary Tree

7.3 Representation of Binary Tree in memory

7.4 Traversing of Binary Tree

7.5 Traversal Algorithm using stacks

7.6 Header Nodes, threads

7.7 Binary Search Tree

7.8 Searching and inserting in a Binary Search tree

7.9 Deleting a Binary Search tree

7.10 Balanced Binary Trees

7.11 AVL Search Trees

7.12 Heap

7.13 General Tree

Module 8: Graphs& itsRepresentation   **Contact Hours: 4**

8.1. Introduction to Graphs

8.2 Graph Theory Terminology

8.3 Sequential Representation of Graphs, Adjacency matrix, path matrix

8.4 Warshall's Algorithms

8.5 Linked Representation of a graph

8.6 Operation of Graph

8.7 Traversing a Graph

8.8 Spanning Trees

Module 9: Searching and SortingTechniques Contact Hours: 7

9.1 Introduction

9.2 Searching: Linear Search and Binary Search

9.3 Sorting: Bubble sort, Selection Sort, Insertion sort, Quick sort,Merge sort, Heap Sort

9.4 Hashing

Books/ References:

1. Data Structure Using C - Seymour Lipschutz. , Mc graw Hill.
2. Fundamentals of Computer Algorithms- Horowitz, E &Sahani, S- Galgotia
3. Data Structures Using C -Reema Thareja, Oxford University Press

Paper Code: DCSE471   **Credit: 3**

Paper Name: Data Structure Using C Lab   **L-T-P: 0-0-3**

1. ImplementionTraversing, Insertion, and Deletion operation of linear array.
2. Implementation of linked list.
3. Implementation of Stack using array and linked list.
4. Implementation of Queues using array and linked list.
5. Implementation of Linear and Binary Search techniques
6. Implementation of different sorting algorithms.
7. Implementation of Binary tree traversal
8. Implementation of Graph traversal

Paper Code: DCSE402   **Credit: 6**

Paper Name: Computer Communication & Networking   **L-T-P: 3-0-0**

Total Contact Hours: 42

Module 1: IntroductionComputer Network   **Contact hours: 5**

1.1 Introduction to Networks

1.2 Uses of Computer Network

1.3 Network Architecture

1.4 Types of Computer Network

1.5 Protocols and Standards

1.6 O.S.I Reference Model

1.7 Service Primitives, Relationship of Services to protocols

1.9 Connection Oriented and Connection Less Services

1.10 TCP/IP Protocol Suite

Module 2: Physical Layer   **Contact hours: 6**

2.1 Transmission Medium

2.2 Wireless Transmission

2.3 Telephone System

2.4 ISDM

2.5 Transmission and Switching

Module 3: Medium Access Sub layer   **Contact hours: 5**

3.1 ALOHA

3.2 CSMA

3.3 Collision Free Protocols

3.4 Channelization protocols

3.5 IEEE Standard 802 for LAN Ethernet, TokenBus, Token Ring

3.6 Bridges

Module 4: Data Link Layer   **Contact hours: 4**

4.1 Data Link Layer Design Issue

4.2 Error Detection and Correction

4.3 Elementary Data Link Protocols

4.4 Sliding windows protocols

Module 5: Network Layer   **Contact hours: 4**

5.1 Network Layer Design Issues

5.2 Logical Addressing

5.3 Routing Algorithms

5.4 Congestion Control Algorithms

Module 6: Transport Layer   **Contact hours: 4**

6.1 Transport layer Services

6.2 Elements of Transport Protocols

6.3 Different Transport Layer Protocols

Module 7: Session Layer   **Contact hours: 4**

7.1 Design Issues

7.1 Concepts of Data Exchange, dialogmanagement, activity management

7.2 Remote Procedure Call, Client server model

Module 8: Presentation Layer   **Contact hours: 4**

8.1 Design Issues

8.2 Data compression Techniques

8.3 Elementary idea of cryptography

Module 9: Application Layer   **Contact hours: 4**

9.1 Design Issues

9.2 File Services

9.3 DNS, E Mail, FTP, HTTP

Module 10: Concepts of Internet and www, HTML   **Contact hours: 2**

Books / References:

1. Computer Networks- A.S. Tanenbaum, PHI
2. Data Communications and Networking- Behrouz A.Forouzan, Tata McGraw-Hill
3. Data Communication & Computer Networks –W.Stallings, PHI

Paper Code: DCSE403   **CREDITS:6**

Paper Name: Microprocessor   **L-T-P:3-0-0**

Contact Hours: 40

Module 1: Evolution of Microprocessor   **Contact hours 2**

1.1 Evolution of Microprocessor, Features of Microprocessors

1.2 Application Microprocessor in daily life with a few examples

Module 2: Architecture of a Microprocessor   **Contact Hours 7**

2.1 Explanation of the blocks

2.2 Concept of bus structure

2.3 Register to register transfer

2.4 Communication with I/O and memory (w.r.t 8086/8088 microprocessor).

2.5 Pin details of 8086/8088 CPU and their function in brief.

Module 3: Addressing Modes and Instruction Execution   **Contact Hours 5**

(w.r.t 8086/8088 CPU),

3.1 Instruction cycles, Instruction set, Timing diagram (w.r.t 8086/8088 CPU).

3.3 Concept of Assembler and Compilers.

Module 4: Memory and I/O interfacing   **Contact Hours 7**

4.1 Concept of address space, address/data bus de-multiplexing

4.2 Address and data bus buffering, address decoding

4.3 I/O concept, Memory interfacing concept, I/O mapped I/O and memory mapped I/O

4.4 Interrupts, Types of interrupts, data transfer schemes- Synchronous, asynchronous and interrupt driven

4.5 DMA data transfer scheme.

Module 5: Application of Assembly Language Programmingin Microprocessor   **Contact Hours 7**

(Use of assembly language may be limited to 8086/8088 CPU)

5.1 Examples of register to register, register to memory, memory to register, block of data movement from one area of memory to another, merging of two blocks of data, data block exchange.

5.2 Examples of arithmetic addition, subtraction, multiplication and division

5.3 Examples of searching and sorting (simple)

5.4 Examples using of look up tables

5.5 Use subroutines and delay program.

Module 6: Interfacing of Peripheral Chips   **Contact Hours 6**

6.1 Brief description of 8255, 8253, 8251, 8257, 8237 and 8259

6.2 Interfacing of the chips with some standard CPU.

Module 7: PC interfacing and Intel 386 & 486 processors   **Contact Hours 6**

7.1 Interfacing of Input/output peripherals like LED

7.2 Seven(7) segment LED display modules, stepper motor, relays through digital I/O card

or through the parallel port, EPROM programming using PC port

7.3 Architecture, register organisation and memory organisation of 386 and 486 processors

Books / References:

1. Advanced Microprocessor and Interfacing - Badri Ram, TMH
2. Microprocessor Architecture, Programming & Application – R.S. Gaonkar
3. Introduction to Microprocessor- R. Mathur
4. Microprocessors and Interfacing- Douglas V Hall

Paper Code: DCSE473　　　　　　　　　　　　　　　　**CREDITS: 3**

Paper Name: Microprocessor Lab　　　　　　　　　　　　**L-T-P: 0-0-3**

Experiment I.

Acquaintance with the microprocessor trainer kit hardware and the user's commands (Dynalog/Vinyties/ALS)

Experiment II. Assembly Language Program development in TASM/NASM

Data transfer program:

  i.　Register to register, register to memory and vice-versa

  ii.　Arithmetic Operation- 8bit addition and subtraction

  iii.　Multi-byte addition and subtraction

  iv.　Multiplication using repeated addition

  v.　Multiplication using shift – add process

  vi.　Signed multiplication, Binary division, BCD division.

Experiment III.

Array processing:

  i.　Adding one entry to an array, checking of an ordered list

  ii.　Replacing one or more entries in a list, storing and searching

  iii.　Block movement, block exchange and data insertion.

Experiment IV.

Look-up table:

  i.　Finding square cubes etc. of a number using look-up table

  ii.　Code conversion using look-up table.

Experiment V. Delay program, use of subroutine (use the above programme as a sub routine in a main program)

Paper Code: DCSE404   **Credit: 8**

Paper Name: Operating System   **L-T-P: 3-1-0**

Total Contact Hours: 42

Module 1: Introductionto Operating System   **Contact hours: 2**

1.1 Definition

1.2 Brief history

1.3 Structure and Function of Operating System

1.4 Different Types of Operating Systems

Module 2: Processes and Process Control Block   **Contact hours: 2**

2.1 Definition

2.2 Process States

2.3 PCB

2.4 Threads

Module 3: Process Synchronization   **Contact hours: 5**

3.1 Inter-process Communication

3.2 Critical Section Problem

3.3 Synchronization Hardware

3.4 Semaphores

3.5 Classical Problems of Synchronization

Module 4: Process Scheduling and Context switching   **Contact hours: 4**

4.1 Basic concepts

4.2 Context Switching

4.3 Scheduling criteria

4.4 Different Scheduling Algorithms

Module 5: Memory Management   **Contact hours: 8**

5.1 Resident Monitor

5.2 Multiple Partition

5.3 Garbage Collection and Compaction

5.4 Page Memory Management, Page replacement Algorithm

5.5 Swapping

5.6 Segmentation,

5.7 Segmented page memory management

5.8 Demand paging

5.9 Virtual Memory

Module 6: File System & its implementation   **Contact hours: 5**

6.1 Concept of files and directories

6.2 File system Implementation

6.3 Security Issues in File

6.4 Protection Mechanism

6.5 Case Studies of UNIX file system

Module 7: Input/Output   **Contact hours: 4**

7.1 Principles of I/O Hardware and Software

7.2 Disk

7.3 Clocks

7.4 Serial and Parallel port Access

7.5 Terminal Access

Module 8: Device Management   **Contact hours: 4**

8.1 Techniques of Device Management –Dedicated, shared and Virtual

8.2 Device Allocation Consideration, I/Otraffic Control and I/O Schedule, I/Odevice handlers

8.3 Spooling

Module 9: Deadlock & its Prevention   **Contact hours: 5**

9.1 Concepts of Deadlock

9.2 Resources

9.3 Deadlock prevention: Ostrich Algorithm,Banker Algorithm and safety Algorithm

9.4 Deadlock Detection and Recovery

Module 10: Distributed Operating System   **Contact hours: 3**

10.1 Definition and types of distributed OS

10.2 WorkStation Server Model

10.3 The Processor Pool Model

10.4 The Hybrid Model

10.5 Case study: SUN NFS File Server

Books / References:

1. Operating System –Madnick and Donovan, MGH

2. Operating System Concepts –A. Silberschatz and P. Galvin, ADP

3. Modern Operating Systems-Andrew S. Tanenbaum, Pearson Education Limited

Paper Code: DCSE405   **Credit: 4**

Paper Name: Computer Hardware and Networking   **L-T-P: 1-1-0**

Total Contact Hours: 28

Module 1: Computer SystemLayout   **ContactHours: 3**

1.1 Identification of System Layout.

1.2 Front Panel Indicators and Switches.

1.3Front side and rear side Connectors.

1.4 Familiarize the System Layout: Making Positions of SMPS, Motherboard, FDD, HDD, CD, DVD, add on cards.

Module 2: Process of Installation & Configuration of BIOS and Secondary Memory Contact Hours: 3

2.1 Configuring BIOSSETUP program and practicing the trouble shooting of typical problems using BIOS utility.

2.2 a) Install Hard disk, Configure CMOS- Setup.

b) Partition HDD using FDISK.

c) Format Hard Disk.

d) Master/Slave/IDE Devices.

2.3 a) Install and configure a CD- Writer & a DVD writer and Recording a blank CD and DVD.

Module 3: Installation of variousDevices   **Contact Hours: 5**

3.1 Printer Installation and Servicing.

a) Head Cleaning.

b) Install and Configure Dot Matrix and Laser Printer.

c) Troubleshoot DMP and Laser printer.

d) Check the data cable connectivity.

3.2 Network Installation and Troubleshooting

 a) NIC, Router, Installing NIC, router and Modem for XP/LinuxEnvironment.

b) Configuring using device drivers.

c) Diagnosis and trouble shooting.

3.3 Installation of multimedia components

 a) Install audio/video devices, microphone, speakerand head set and Digital camera.

b) Trouble shoot the audio-video devices.

c) Install and configure Web Cam.

Module 4:Basic Trouble Shootings   **Contact   Hours: 5**

4.1 a) Identifying the Problems in PC with add on Cards.

b) Identify problems with software installation using drivers available in the motherboard CD.

4.2 Practice with scan disk, disk clean-up, disk Defragmentation, Virus Detection and Rectification Software.

4.3 Practice with backup and restore data in a network server using external storage Device.

4.4 Assemble a PC with add on cards and check the working condition on the system.

Module 5: Operating System InstallationContact Hours: 2

Windows and Linux- Operating System Installation.

Module 6: Basics of Networking   **Contact Hours: 3**

6.1 Do the following cabling works in a network

a) Cable Crimping.

b) Creating straight Cable.

c) Creating Cross Cable.

6.2 Establish a LAN connection amongst three nodes in a bus topology.

6.3 Establish Peer-to-Peer network connection between two nodes in LAN.

6.4 Interface PCs using connectivity devices-Hub, router and switch.

Module 7: Configuration of LAN   **Contact Hours: 3**

7.1 a) Configure IP address in a system in LAN (TCP/IP Configuration).

b) Configure DNS to establish interconnection between systems.

7.2 a) Transfer files between systems in LAN using FTPConfiguration.

b) Login a system remotely using telnet protocol.

7.3 a) Install and configure Network interface card in a LAN system.

b) Share a file and printer (remotely) between two systems in a LAN.

Module 8: Fundamentals of Security   **Contact Hours: 2**

8.1 Establish security in a system using firewall configuration.

8.2 Create and share the user rights by accessing server for a specific user groups.

8.3 Install and configure the following:

a) A DHCP server in windows with IP Address ranging from 192.168.1.1 to 192.168.1.100

b) Configure a DHCP Client

8.4 Transfer Files Between systems using wireless Communication.

8.5 Configure Mail Server.

Module 9:Basicsof Networking ImplementationContact Hours: 2

Write a Client Server Program to connect different PCs

Books/ References:

1. Repairing and Upgrading PC's - Scott Mueller, Pearson
2. The Complete PC Upgrade and Maintenance Guide -Mark Minasi

3.   Modern Computer Hardware Course - ManaharLotia, Pradeep Nair and PayalLotia.

Paper Code: DCSE475   **Credit: 3**

Paper Name: Computer Hardware and Networking Lab   **L-T-P: 0-0-3**

Experiment on:

1.   i) Identification of Front Panel Indicators and Switches.

     ii) Identification of Front side and rear side Connectors.

     iii) Making Positions of SMPS

     iv) Identification of Motherboard components

2.   i) Configuring BIOS SETUP

     ii) Install Hard disk, Configure CMOS- Setup.

     iii) Partition HDD using FDISK. iv) Format Hard Disk.

     v) Data transfer using Master/Slave/IDE Devices.

     vi) Install and configure a CD- Writer & a DVD writer and Recording a blank CD and DVD.

3.   i) Install and Configure Dot Matrix and Laser Printer.

     ii) Installing NIC, router and Modem for XP/Linux Environment.

     iii) Configuring devices using device drivers

     iv) Installation of multimedia components

     v) Install audio/video devices, microphone, speaker and head set and Digital camera.

     vi) Install and configure Web Cam.

4.   i) Practice with scan disk, disk clean-up, disk Defragmentation, Virus Detection and Rectification Software.

     ii) Practice with backup and restore data in a network server using external storage Device.

     iii) Assemble a PC with add on cards and check the working condition on the system.

5.   Installation of Windows and Linux- Operating System.

6.   i) Cable Crimping. ii) Creating straight Cable. iii) Creating Cross Cable.

     iv) Establish a LAN connection amongst three nodes in a bus topology.

     v) Establish Peer-to-Peer network connection between two nodes in LAN.

     vi) Interface PCs using connectivity Devices-Hub, router and switch.

7.   i) Configure IP address in a system in LAN (TCP/IP Configuration).

     ii) Configure DNS to establish interconnection between systems.

     iii) Transfer files between systems in LAN using FTP Configuration.

     iv) Login a system remotely using telnet protocol.

     v) Install and configure Network interface card in a LAN system.

     vi)Share a file and printer (remotely) between two systems in a LAN.

8.   i) Establish security in a system using firewall configuration.

ii) Create and share the user rights by accessing server for a specific user groups.

iii) Install and configure the following:

iv) Configure a DHCP Client

v)Transfer Files Between systems using wireless Communication.