APPLIED MATHEMATICS

L	T	P		Curri. Ref. No.: G105
3	0	0		

Total Contact Hrs.: **Total Marks: 125** **Theory:**

Theory/Lecture: 45 End Exam : 70

Tutorial: 0 P.A.: 30

Practical: 0 **Practical:**

Pre-requisite: P.A. : 0

Credit : 3

DETAIL COURSE CONTENT

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1.0 NUMERICAL ANALYSIS **13**

    1.1 Interpolation.

      (i) Introduction to interpolation.

      (ii) Lagrange's interpolation formula.

      (iii) The operators $\triangle$, ∇ and E. Relation between them.

      (iv) Difference Table.

      (v) Newton's forward and backward interpolation formula.

      (vi) Concept of extrapolation.

2.0 Differential Equations (ordinary **12**

    (i) Introduction.

    (ii) Order and degree of a differential equation.

    (iii) Formation of Differential Equations.

    (iv) Solution of a Differential Equation.

    (v) Differential equation of the first order and first degree.

    (vi) Variables separable.

    (vii) Homogeneous Differential Equations.

    (viii) Linear Differential Equations.

    (ix) Exact differential Equations.

3.0 Graph Theory **15**

    1) Introduction.

    2) Basic Terminology.

    3) Simple Graph, Multigraph and Pseudo graph.

    4) Degree of a Vertex.

    5) Types of Graphs.

    6) Subgraphs and Isomorphic Graphs.

    7) Operations of Graphs.

4.0 Discrete Mathematics **5**

    4.1 The principle of Inclusion and Exclusion with examples.

    4.2 Generating Functions.

      (i) Introductory examples.

      (ii) Definition and examples of Calculation Techniques.

          TOTAL: 45

SUGGESTED LEARNING RESOURCES:

Reference Books :

(1) Integral Calculus by B.C.Das and B.N.Mukherjee.

(2) Diploma Engineering Mathematics (Volume-II) by B.K.Pal.

(3) Applied Mathematics-I by Dr.J.S.Bindra and K.S.Gill.

(4) Applied Mathematics-II by Dr.J.S.Bindra and K.S.Gill.

(5) Applied Mathematics-III by Dr.J.S.Bindra.

(6) Engineering Mathematics (Volume-I, Volume-II & Volume-III) By S.Arumugam, A.Thangapandi Issac and A.Somsundaram.

(7) Discrete and Combinatorial Mathematics by Ralph P.Grimaldi.

(8) A TEXT BOOK OF DISCRETE MATHEMATICS by Swapan Kumar Sarkar.

(9) Mathematics for Polytechnic by S.P.Deshpande.

(10) Higher Engineering Mathematics by B.S.Grewal.

(11) Introductory Method of Numerical Analysis by S.S.Sastry.

(12) Calculus of Finite Difference and Numerical Analysis by Gupta-Malik.

ELECTRICAL CIRCUITS

L	T	P	
2	0	2	

Curri. Ref. No.: CSE401

Total Contact Hrs.:   **Total Marks: 125**   **Theory:**

Theory:30

End Term Exam : 50

Tutorial: 0

P.A.: 25

Practical: 30

Practical:50

Pre-requisite: Nil

End Term Exam: 25

Credit : 3

P.A.: 25

DETAIL COURSE CONTENT

THEORY: 75 Marks

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1.   Magnetic Circuits   6

1.1 **To define**
1.1.1 Magnetising force
1.1.2 Magnetic intensity
1.1.3 Magnetomotive force
1.1.4 Magnetic flux

1.2 Write the relation between Magnetic flux and magnetic intensity

1.3 **To define**
1.3.1 Magnetic Cycle of magnetisation
1.3.2 Magnetic hysteresis
1.3.3 Hysteresis loop

1.4 **To define**
1.4.1 Permeability
1.4.2 Permeance
1.4.3 Reluctance

1.5 Describe magnetic circuit and comparison with electric circuit
1.6 **To describe**
1.6.1 Series
1.6.2 Parallel
1.6.3 and composite magnetic circuit
1.7 To enumerate the energy started in a magnetic field
1.8 To determine the pulling force by an electromagnets
1.9 To describe the magnetic circuit in relay
1.10 To solve simple problems on magnetic circuit

2.   Passive Circuit Elements   5

2.1 **Resistance**
2.1.1 To define resistance
2.1.2 To write equation relating voltage current and resistance
2.1.3 To state unit of resistance
2.1.4 To write expression relating resistance, resistivity, length of conductor and area
2.1.5 To write different expression for the energy dissipated in a resistance
2.1.6 To write the specification of resistance
2.1.7 To describe the colour code of resistance
2.1.8 Solving simple problems on resistance

2.2 **Capacitor**
2.2.1 To define Capacitor
2.2.2 Types of Capacitors
2.2.3 To write simple equation relating
(a) Capacitance, charge and voltage
(b) Capacitance current and voltage
(c) Energy stored in terms of capacitance and voltage
(d) Capacitance, Area of the plate and distance between plates.
2.2.4 To describe the construction of capacitor
2.2.5 To write the specification of capacitor
2.2.6 To solve simple problems on capacitor

2.3 **Inductor**
2.3.1 To define inductor
2.3.2 To write simple equations relating to voltage, current and inductance

2.3.3 To describe the construction of inductor
2.3.4 To define self and mutual inductance
2.3.5 To define coefficient of coupling
2.3.6 To describe dot convention
2.3.7 To state the unit of inductance
2.3.8 To write the expression for energy stored in inductance
2.3.9 To name different type of inductors and their field of application
2.3.10 To write the equation of inductor relating to its physical dimensions
2.3.11 To solve simple problems on inductor

3. **D.C. Circuits**   4
3.1 To define voltage and current source
3.2 To represent graphically the ideal current and voltage source
3.3 To represent graphically the practical voltage and current source
3.4 To describe series parallel combination and determine the equivalent resistance
3.5 To deduce the conversion formulae for Delta to Star and vice-versa
3.6 *To state*
3.6.1 Kirchhofff's current law
3.6.2 Kirchhofff's voltage law
3.6.3 Superposition theorem
3.6.4 Norton's theorem and Thevenin's Theory
3.6.5 Maximum power transfer theorem
3.6.6 To solve the D.C network problems using above theorems and laws.

4. **Sinusoidally excited Circuits**   5
4.1 To differentiate between A.C and D.C
4.2 To describe the principle of generation of sinusoidal voltage and its waveform
4.3 **To define**
 (a) Cycles (b) Frequency (d) Time Period (d) amplitude
 (e) Phase difference
4.4 To define Average and RMS value of simple waves
4.5 To write R.M.S. and average value of sinusoidal quantity
4.6 To define form factor and peak factor
4.7 To represent sinusoidal wave by phases

4.8 **To represent sinusoidal quantities in -**
4.8.1 To exponential form
4.8.2 Complex form
4.8.3 Polar form

5. **Series and parallel Resonance**   3
5.1 To state the condition for series resonance
5.2 To determine the expression of frequency at resonance condition
5.3 To define quality factor
5.4 To define band width
5.5 To state the condition for parallel resonance
5.6 To determine the resonance frequency for parallel LC Circuit
5.7 To solve problems on series and parallel resonance

6. **Magnetics fields and forces**   4
6.1 Definition of magnetic poles
6.2 Definition of magnetic flux, flux density
6.3 Characteristics of magnetic field
6.4 Properties of magnetic flux
6.5 To define electromagnetism
6.6 To define magnetic saturation
6.7 To define m.m.f, reluctance
6.8 To define permeability
6.9 Basic magnetic circuit (including Toroid)
6.10 Analog between electrical & magnetic circuit
6.11 To solve simple problem of ampere Turns, flux current etc.

7. **Magnetic force field interaction**   3
7.1 Time varying magnetic field
7.2 Faraday's law of electromagnetic induction
7.3 Flemings right hand rule (examples of simple loop generator)
7.4 Flemings left hand rule (examples of simple loop generator)
7.5 Force acting on a current carrying conductor placed in a uniform magnetic field
7.6 **Definition of Induced *emf***
7.6.1 Statistically induced emf (Example transformer)
7.6.2 Dynamically induced emf (Example transformer)

PRACTICAL: 50 Marks

LIST OF EXPERIMENTS
1. Identification of passive components
2. Performing good bad test of passive components
3. To verify Kirchhoff's current law and voltage law
4. To verify super position theorem
5. To verify Thevenins' theorem
6. To measure impedance, power and p.f. of series R-L-C circuit and draw the phaser diagram
7. To verify maximum power transfer theorem
8. To determine the resonance frequency and Q factor in a parallel L-C circuit
9. To study a single phase transformer to explain statistically induced e.m.f
10. To study a d.c. generator to explain dynamically induced e.m.f

SUGGESTED LEARNING RESOURCES

Reference Book:
Electronics and Electrical Engineering; Lionel Warnes (Macmillan)

COMPUTER PROGRAMMING USING C - II

L   T   P   Curri. Ref. No.: CSE402
2   0   4

Total Contact Hrs.:   **Total Marks: 150**   **Theory:100**

Lecture: 30   End Term Exam: 70

Tutorial: 0   P.A.: 30

Practical: 60   **Practical:50**

Pre-requisite: G205B   End Term Exam: 25

Credit : 3   P.A. : 25

DETAIL COURSE CONTENTS

THEORY:

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1   CONTROL STATEMENTS   **4**

   1.1   Preliminaries
   1.2   Branching: The if-else statement
   1.3   Looping: while, do-while & for statements
   1.4   Nested Control Structures
   1.5   The switch statement
   1.6   The break statement
   1.7   The continue statement
   1.8   The Comma operator
   1.9   The goto statement

2   FUNCTIONS   **5**
   2.1   Concepts of a Function
   2.2   Accessing a Function
   2.3   Function Prototypes
   2.4   Passing Arguments to a Function
   2.5   Recursion

3   PROGRAM STRUCTURES   **4**
   3.1   Storage Classes
   3.2   Automatic Variables
   3.3   External (Global) Variables
   3.4   Static Variables

4   ARRAYS   **4**

   4.1   Defining an Array
   4.2   Processing and Array
   4.3   Passing Arrays to Functions
   4.4   Multidimensional Arrays
   4.5   Arrays and Strings

5   POINTERS   **6**
   5.1   Concepts of pointers & its role in C programming
   5.2   Pointer Declarations
   5.3   Passing Pointers to Functions
   5.4   Pointers and one-dimensional Arrays
   5.5   Dynamic Memory Allocation
   5.6   Operations on Pointers
   5.7   Pointers and Multidimensional Arrays
   5.8   Arrays of Pointers
   5.9   Passing Functions to Other Functions

6.   STRUCTURES AND UNIONS   **3**

   6.1   Defining a structure
   6.2   Processing a Structure
   6.3   Unions

7   DATA FILES   **4**
   7.1   Opening and closing a Data File
   7.2   Creating a Data File
   7.3   Processing a Data File
   7.4   Unformatted Data Files

PRACTICAL: Total Periods: 60Hrs. Periods: 4P/W

1. **Introduction**
   1.1   C language and its compilers
   1.2   Keywords, expressions, constant
   1.3   Primitive data types in C
   1.4   Header files and library functions
   1.5   Types of Variable
   1.6   Pre-processor directive and Macro

2. **Using Program Control**
   2.1   Conditional Statements
   2.2   Iterative Statement
   2.3   Unconditional jump and its restrictive usage
   2.4   Importance of initialization

3. **Working with Arrays**
   3.1   Overview of array
   3.2   One dimensional array
   3.3   Multidimensional array
   3.4   String representation
   3.5   String manipulation

4. **Creating User defined Function**
   4.1   Writing functions in C language
   4.2   Function definition and function declaration
   4.3   Writing void function
   4.4   Writing parameter passing and global declaration
   4.5   Scope of variables in function
   4.6   Recursion: Binary search, quick sort

5. **Using Pointers**
   5.1   Overview of pointer
   5.2   Pointer and array
   5.3   Dynamic allocation using pointers
   5.4   Pointer to pointer
   5.5   Parameter passing using pointer
   5.6   Using command line argument

6. **Application of Structure and Union**
   6.1   Over of structure
   6.2   Array of structure
   6.3   Pointer to structure
   6.4   User defined data type
   6.5   Representation linked list: Stacks Queries
   6.6   Representation of binary tree
   6.7   Representation of generalized tree
   6.8   Union

7. **Low Level Programming in C**
   7.1   Bitwise operation
   7.2   Register handling
   7.3   Enumerated data type

8. **File Handling in C**
   8.1   Modes of file handling
   8.2   Linking file pointer
   8.3   Working with binary file
   8.4   Building own header file
   8.5   Linking multiple source files

SUGGESTED LEARNING RESOURCES

REFERENCE BOOKS:
   1. Programming in ANSI C – by E. Balagurusamy, TMH
   2. C Programming Language, the (ANSI C version) – by Kernighan & Ritchie, PHI
   3. Let Us C – by Yashwant Kanitkar, BPB
   4. Programming in C – Schaum Series

LIST OF EQUIPMENT
Hardware: Stand alone PC   (for detail, please refer Annex – I)
Software: C Compiler

SOFTCORE – I (Environmental Education I)

L	T	P	
3	0	0	

Curri. Ref. No.: G301

Total Contact Hrs.:   **Total Marks: 100**   **Theory:**

Lecture: 45

Tutorial: 0

Practical: 0

Pre-requisite:NIL

Credit: 3

End Term Exam: 70

P.A.: 30

Practical:

End Term Exam.:0

P.A.:0

RATIONALE:

Management of Environmental Degradation as also its control using innovative technologies is of prime importance in the times we are living in. Since the days of the famed Rio Summit (1992) awareness about degradation of environment we live in an its management through participation of one and all has literally blossomed into a full-fledged movement of universal importance. Technically qualified people, such as the Diploma Engineers, should not only be aware about new technologies to combat environmental degradation at their disposal but also various aspects of environment, ecology, bio-diversity, management, and legislation so that they can perform their jobs with a wider perspective and informed citizens. This course can be taken by all diploma students irrespective of their specializations.

Course Outcome:-
Module/Unit

1. After completion of the course, the students will be able to:
2. Identify scope and components of environment
3. Define different concept of ecological aspects of environment
4. Identify different sources of natural resources with their appropriate usages and protection.
5. Identify global environmental issues.
6. Distinguish different types of environment pollution.
7. Identify different environmental legislation acts.
8. Access impact of environment by applying different standard mechanism.
9. Apply different clean technology for improving QWL.

DETAILED COURSE CONTENTS

THEORY:(*Total Periods*: 45   *Periods*: 3P/W)

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.
1. INTRODUCTION 　1.1　Introduction 　1.2　Environment and its components 　1.3　Environment in India 　1.4　Public Awareness	2
2. ECOLOGICAL ASPECTS OF ENVIRONMENT 　2.1　**Ecology** 　　2.1.1　Eco-system 　　2.1.2　Factors affecting Eco-system 　2.2　**Bio-geochemical cycles** 　　2.2.1　Hydrological cycle 　　2.2.2　Carbon cycle 　　2.2.3　Oxygen cycle 　　2.2.4　Nitrogen cycle 　　2.2.5　Phosphorous cycle 　　2.2.6　Sulphur cycle 　2.3　**Bio-diversity** 　2.4　**Bio-diversity Index**	8
3. NATURAL RESOURCES 　3.1　Definition of Natural Resources 　3.2　Types of Natural Resources 　3.3　Quality of life 　3.4　Population & Environment 　3.5　Water Resources 　　• Sources of Water 　3.6　Water Demand	5

Text /Reference Books:

1. Environmental Engineering, Pandya & Carny, Tata McGraw Hill,New Delhi.
2. Introduction to Environmental Engineering and Science, Gilbert M. Masters, Tata McGraw Hill,New Delhi.
3. Waste Water Engineering – Treatment, Disposal & Reuse, Metcalf & Eddy, Tata McGraw Hill,New Delhi.
4. Environmental Engineering, Peavy, TMH International New York.
5. Environmental Science, Aluwalia & Malhotra, Ane Books Pvt. Ltd, New Delhi.
6. Text Book of Environment & Ecology, Acme Learning, New Delhi.
7. Environmental Science & Ethics, Acme Learning, New Delhi.
8. Environmental Chemistry, Prentice Hall of India, New Delhi.
9. Study / training materials, references, reports etc. developed by Central Pollution Control Board, New Delhi as also State Pollution Control Boards. Central Pollution Control Board Postal Address: Parivesh Bhawan, CBD-cum-Office Complex East Arjun Nagar, DELHI - 110 032, INDIA Tel.: 91-11-22307233,Fax: 91-11-22304948, e-mail: ccb.cpcb@nic.in

Others:
1. Text book mentioned in the references
2. Lab Manuals
3. OHP Transparencies
4. Video film on Environment

DIGITAL CIRCUITS

L	T	P	
3	0	2	

Curri. Ref. No.: CSE403

Total Contact Hrs.:75　　**Total Marks: 150**　　**Theory:100**

Lecture: 45　　　　　　　　　　　　　　　　　End Exam : 70
Tutorial: 0　　　　　　　　　　　　　　　　　P.A.:30
Practical: 30　　　　　　　　　　　　　　　**Practical:50**
Credit:4　　　　　　　　　　　　　　　　　　End Exam.: 25
　　　　　　　　　　　　　　　　　　　　　　P.A. : 25

Theory
Total Periods　: 45
Periods　　　　: 3 P/W

DETAIL COURSE CONTENTS:

THEORY:

UNIT	TOPIC/SUB-TOPIC	Lecture Hrs.
1.0	**NUMBER SYSTEM:** Number Systems and Codes : Decimal, Binary, Octal, Hexadecimal number system and conversion from one number system to another, Arithmetic operations using these number systems, Representation of negative number in the different number systems, Complements and complement subtraction, Different codes (8421, Ex~3, 2421, Gray, Alphanumeric, BCD, Seven segment codes etc) and code conversions.	6
2.0	**BOOLEAN ALGEBRA AND LOGIC GATES:** Postulates and different theorems. SOP and POS forms of expression and their conversion. Simplification : using Boolean theorems and k-map (up to 4 variables) Basic logic gates - their symbols, truth table and logic ' expression for the output simple circuit realization using the logic gates. Realization of any expression either using all NAND or NOR gates.	6

3.0 COMBINATIONAL LOGIC CIRCUITS :   **8**

Arithmetic circuit (Adder/ Subtractor), Multiplexers and their uses, Decoder/demultiplexers and their uses, code converter, Encoder, parity generator/checkers.

4.0 FAMILIES OF LOGIC CIRCUIT :   **3**

TTL and CMOS family, open collector and tri-state logic gates.

5.0 STORAGE DEVICES & SEQUENTIAL CIRCUITS :   **12**

Latches and Flip-flops, Timing diagrams of latches and flip flops, conversion of one flipflop to another, Counters - Binary ripple counters, Asynchronous module counters, UP/Down counter, Synchronous counters (binary, different modulo and UP/Down), Timing diagram of all types of counters. Brief introduction to a few commercially available counter ICs (asynchronous and synchronous).   (6)

5.1 Shift-registers-Different types of shift registers and their functional details, A few applications of shift-registers.   (4)

5.2 Memory -Memory types and terminology, Memory organization, Semiconductor memory, reading and writing, RAM, ROM, PROM cells and circuits, EPROM (Programming and erasing), Dynamic RAM, Memory expansion, PLA.   (2)

6.0 DATA CONVERTERS: **6**

Digital-to-Analog Conversion - Weighted resistor, R-2R ladder, DAC performance and their characteristics.
Analog-to-Digital Conversion - Counter type ADC, dual slope type, successive approximation type, tracking type and flash type, ADC performance and their characteristics.

7.0 DISPLAY AND DISPLAY DRIVES: **4**

Introduction to LED, LCD, 7-segment displays, Bar graph display and Dot matrix displays. Decoder drivers for 7-segment display, Bar graph display and LCD. Multiplexing of display.

                                  TOTAL: 45

PRACTICAL: 30 Periods
Classes: 2P/W

1. Verification of truth tables of different basic logic gates.
2. Realisation of logic expressions using different basic logic gates.
3. Realisation of logic expressions using either all NAND or all NOR gates.
4. Adder circuits (Half, Full-adder) design.
5. Design of a multiplexer using logic gates (4 to 1 Multiplexer)
6. Use of commercially available multiplexer ICs to realise two logic functions.
7. Design of a decoder using logic gates (2 to 4 decoder)
8. Use of commercially available decoder ICs to realise two logic functions.
9. Design of RS, JK, D latches using logic gates.
10. Design of master/slave JK flip-flop.
11. To study the functional behaviour of some commercially available flip-flop ICs JK and D)
12. Counter design (modulo 6 and 10 asynchronous and synchronous counters) using flip-flop and to display the counts on 7-segment display units.
13. To study the performance of some commercially available counter ICs (asynchronous and synchronous), cascading of counter ICs, Different modulo (MOD-6 and MOD-10) counter design using counter ICs.
14. To design a shift register using flip-flops and to study its behaviour.
15. To study the different functional features of shift register ICs.

REFERENCE BOOKS:
1. Digital Systems – by Ronald J. Tocci, PHI
2. Digital Design – by Mano, PHI
3. Digital Logic & Comp. Design – by Mano, PHI

LIST OF EQUIPMENT
1. **Digital Trainer Kit**
2. **Powered Project board containing**
   i) Solderless breadboard with
   ii) Power supply
   iii) Power lead and connector plate
3. **Logic Trainer lab with**
   i) DC power supply (+5V, 1A, 5V at 500 mA +/- 15V at 500 mA)
   ii) Logic Switches (slide)
   iii) Pulse generator 1Hz, 10Hz & 100 Hz sq. wave
   iv) Logic gates (30 built in logic gates comprising dual input for each of AND, OR, NAND, NOR, XOR & NOT gates)
   v) Power supply
4. **Flip-flop trainer kit**
5. **Counter trainer kit**

COMPUTER ARCHITECTURE & ORGANIZATION

L	T	P		Curri. Ref. No.: CSE404
3	0	0		

Total Contact Hrs.: 45   **Total Marks: 100**   **Theoryl:**

Lecture: 45   End Term Exam: 70

 Tutorial: 0   P.A. : 30

Practical: 0   **Practical:0**

Pre-requisite: NIL   End Term Exam:0

Credit : 3   P.A.:0

DETAIL COURSE CONTENT

THEORY:

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1. Evolution of Computers: **5**
Brief history of development; Babbage's machines, Von Neumann
Concept, Difference between calculators and computers,
Generations of Computer -SSI, LSI, VLSI, Classification - micro,
mini, main frames and supercomputers. PC's and portable systems.

2. Number Representation: **5**
Signed numbers, Signed - magnitude 1's complement, 2's
complement and excess notations, numbers, Fixed and floating
point numbers and operations, Booth's Algorithm, Common errors
in arithmetic truncation errors, round of errors.
Codes: weighted and non-weighted, BCD, ASCII, EBCDIC

3. Central Processing Unit: **8**
Components of Arithmetic Logic Unit (in block diagram only),
Different types of instructions, Instruction format, addressing
modes, different CPU registers - Accumulator, Flag, Program

Counter, Instruction Register and General Purpose registers.
Hardware control unit - its different functions

4. Microprocessor: **7**
Intel 8085 architecture and simple assembly language programming
concept, Brief introduction to Intel 8086/8088 and Pentium
processor (relative study), Brief introduction to RISC processor

5.   Memory: **6**
Concept of bits, bytes and words; Storage of numbers and characters,
RAM, ROM, EPROM; Concept of cache memory - its role in
performance improvement, memory hierarchy

6. I/O Devices: **10**
Printers - Dot Matrix, Ink Jet, Line, Laser; Visual display unit –
alphanumeric and graphic, Keyboard, Graphics devices - mouse, joy-
stick, Scanners and digitizers.
Auxiliary storage devices - floppy and Hard disk: Sectors, tracks and
cylinders, accessing mechanisms (brief idea) Magnetic tapes - description
and accessing mechanisms, CD ROM.

7. PC Architecture   **4**

                                                    TOTAL: 45

SUGGESTED LEARNING RESOURCES:

Reference Books :

1. Computer Organization & Architecture – by Stallings, PHI
2. Computer Organization – by V. C. Hamacher, Z. G. Vranesic & S. G. Zaki, MGH
3. Computer Architecture & Organization – by J. P. Hayes, MGH
4. Computer Organization & Design – by Pal Chaudhuri, PHI
5. Computer System Architecture – by Mano, PHI

COMMUNICATION ENGINEERING

L	T	P		Curri. Ref. No.: CSE405
3	0	2		

Total Contact Hrs.:75   **Total Marks: 150**   **Theory:100**

Lecture: 45   End Exam : 70

Tutorial: 0   P.A. : 30

Practical:30   **Practical:50**

Prerequisite:NIL   End Term Exam:25

Credit : 3   P.A.:25

DETAIL COURSE CONTENT

THEORY: Total Periods: 45
        Periods: 3P/W

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1. Analog Communication: 3

Amplitude Modulation: Need to modulate definition, Carrier, Sidebands, Modulation factor and percentage Modulation, Power in carrier and sidebands, Modulated wave form, generation of Double side band (DSB) and single side and (SSB).

Brief Description with block diagram of an A.M. transmitter.

2. AM Radio Receiver: 4

Demodulator: Square law deleetor, Concept of hetero-dyning, Block Schematic diagram and operational description of an AM receiver, sensitivity, selectivity and Fidelity of a receiver. Qualitative idea about IF freq, Local OSC, IF stage and output audio stages

3. Frequency Modulation principles: 4

Definition, Modulated wave, Frequency Deviation % Modulation, Bandwidth, & Spectrum of FM wave. Armstrong method of Generation of FM waves. Brief description about FM transmitter

4. FM Receivers   3

Detection of FM wave, the Discriminator, Qualitative Description of different stages of an FM receiver. Comparison of AM and FM systems.

5. Telegraphy: 5

Nodes – Morse, cable, 5 unit & 7 unit code and their uses, speed of working band, Manual Telegraphic System, Principles of Carrier Telegraphy.
Telegraph Instruments: Mouse key (single current), double current key, PBO secounder polarised and non-polarised telegraph relays.
Teleprinter: Principles of working, Construction of Teleprinter, transmitter receiver, automatic Telex system (Principle of working)
Line Testing: Murray & Verley looptests, Principles of carrier telegraphy.

6. Telephone: 5

Telephone Instruments: Subscriber Telephone apparatus and accessories, Receiver, Transmitter, magnetic generator, Hay's transmission bridge, working principles of manual exchange High grade Communication Receivers (Modular block diagram & working principle. Study of frequency synthesiser; phase locked loop, VCD digital read out, different types of filters and detectors. Noises in receivers and their reduction. Principles of VHF receivers, Digital discriminator, selective calling circuit.
Automatic Telephones: Principles of multi exchange, Intercensing, Telex & RTTTU.

7. Digital Modulation Techniques: 4

Principle of Sampling, Quantization, pulse code modulation (PCM). Frequency shift Keying (FSK) and phase shift keyin (SK).

8. Work, Power and Energy: 10

Data forms, VRF System : (Simplex, half duplex, duplex communication) Transmission Mode between statious, Networks : Point to point, star, Ring, Bus. Data Communication systems Block schomatic Description Brief Introduction to Time Division Multiplexing, freguency Division Multiplexing principle under hygin synchronom and Asynchronoum transmission. Moderns Low speed modems, Medium speed modems and High speed Modems concept and need for protocols.

9. A brief Introduction to Fiber optic communication system and satellite communication system. An introductory description of Mobile communication.   **3**

10. Antenna – Basic principles.   **2**

<div align="right">

TOTAL: 45

</div>

Practical: Total Periods: 30
             Classes   : 2 P/W

LIST OF EXPERIMENTS:
1. To study the amplitude modulation and demodulation technique.
2. To study the frequency modulation and demodulation technique.
3. To study the frequency spectrum of AM and FM with the help of spectrum analyzer.
4. To study the analog signal sampling and reconstruction of the effect of: —
    (a) Different sampling frequencies on reconstructed signals;
    (b) Darying duty cycle of sampling frequency on the amplitude of reconstructed signal.
5. To study some radio receiver measurements: (a) sensitivity, (b) selectivity and (c) fidelity.
6. To study EPABX:
    (a) To study the electrical behaviour of different tones – dial tone, ringing tone, ring back tone and busy tone (both subscriber and exchange);
    (b) To study some extension features-redial, burgling, extension privacy, call forwarding, follow me etc.

Reference Books:

1.   Data Communication and Networking – by B.A. Forouzan TMH
2.   Principles of Communication Systems – by H. Taub, D.L. Schilling, G. Saha, TMH
3.   Digital and Analog Communication System – by L.W. Couch, Pearson Education
4.   Radio Antenna and Propagation – by W. Gosling, Newsnes
1.   Communication Electronics by Frenzel,Tata McGraw-Hill
2.   Electronic Communication System by Kennedy, Tata McGraw-Hill
3.   Principles of Communication System by Taub& Schilling, Tata McGraw-Hill
4.   Electronic Communication by Roddy&Coolen, Prentice Hall of India, N. Delhi
5.   Communication System by Simon Haykin, WI Ltd.
6.   Telemetry Principles by D. Patranabis, Tata McGraw-Hill
7.   Electronic Communication System by Dungan, Vikash Publishing House

DEVELOPMENT OF LIFE SKILL - II

L	T	P	Curri. Ref. No.: G302
1	0	3	

Total Contact Hrs.:   **Total Marks: 50**   **Theory:**

Theory: 15   End Exam : 0

 Tutorial: 0   P.A. : 0

Practical: 30   **Practical:50**

Pre-requisite: End Term Exam:0

Credit : 3   P.A.:50

Aim:-This subject is kept to

- Conduct different session to develop students interpersonal skills
- Conduct different session to improve problem solving skills
- Conduct different session to improve communication and presentation skills

Objective: - This course will enable the students to:

- Develop interpersonal skill
- Develop problem solving skill.
- Develop presentation skill
- Enhance creativity skills.
- Develop communication skills.
- Prepare for interviews

DETAIL COURSE CONTENT

THEORY:

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1. INTER-PERSONAL RELATION   **1**

Importance, Interpersonal conflicts, Resolution of conflicts, Developing effective interpersonal skills communication and conversational skills, Human Relation Skills (People Skills).

2. PROBLEM SOLVING   **2**

I) **Steps in Problem Solving (Who? What? Where? When? Why? How? How much?)**
   1. Identify, understand and clarify the problem
   2. Information gathering related to problem
   3. Evaluate the evidence
   4. Consider feasible options and their implications
   5. Choose and implement the best alternative
   6. Review

II) **Problem Solving Technique**
   1. Trial and Error
   2. Brain Storming
   3. Thinking outside the Box

3. PRESENTATION SKILLS   **4**

Concept, Purpose of effective presentations.

Components of Effective Presentations:
Understanding the topic, selecting the right information, organizing the process interestingly, Good attractive beginning, Summarising and concluding, adding impact to the ending.

Use of audio visual aids OHP, LCD projector, White board.

Non verbal communication:
Posture, Gestures, Eye contact and facial expression, Voice and Language Volume, pitch, Inflection, Speed, Pause, Pronunciation, Articulation, Language, Handling questions Respond, Answer, Check, Encourage, Return to presentation.

Evaluating the presentation:
Before the presentation, During the presentation, After the presentation.

4. LOOKING FOR A JOB   **2**

Identifying different sources announcing Job vacancies, Skim, scan and read advertisements in detail, write efficacious CVs, write covering letters to a company CVs, write Job Application Letters in response to advertisements and self-applications

5. **JOB INTERVIEWS**   4

   Prepare for Interviews:
   Intelligently anticipating possible questions and framing appropriate
   answers, Do's and don'ts of an interview(both verbal and non verbal).
   Group Discussion:
   Use of Non verbal behavior in Group Discussion,
   Appropriate use of language in group interaction,
   Do's and don'ts for a successful Group Discussion.

6. **NON VERBAL GRAPHIC COMMUNICATION**   1
   Nonverbal codes:

   A. Kinesics. B. Proxemics.   C. Haptics.   D. Vocalics.
   E. Physical appearance,   F. Chronemics,.
   G. Artifacts Aspects of Body Language

7. **FORMAL WRITTEN SKILLS**   1
   Memos, Emails, Netiquettes, Business correspondence Letter of
   enquiry, Letter of Placing Orders, Letter of Complaint.

                                                    TOTAL: 15

PRACTICAL   30 Hrs.

Unit 1   Inter-personal Relationship   2
   Case   Studies:
   1. From books.
   2. From real life situations.
   3. From students' experiences.
      Group discussions on the above and step by step write of any
      one or more of these in the sessional copies.

Unit 2   Problem Solving   4
   Case Studies:
   1. From books
   2. From real life situations
   3. From students' experiences
      Group discussions on the above and step by step write of any
      one or more of these in the sessional copies.

Unit 3   Presentation Skills   8
   Prepare a Presentation (with the help of a Power point) on a
   Particular topic. The students may refer to the Sessional activity
   (sl.No.8) of the Computer Fundamental syllabus of Semester1. For
   engineering subject oriented technical topics the cooperation of a
   subject teacher may be sought. Attach hand out of PPT in the
   sessional copy.

Unit 4   Looking for a job   4
   Write an effective CV and covering letter for it.
   Write a Job Application letter in response to an advertisement and
   a Self-Application Letter for a job.

Unit 5   Job Interviews & Group Discussions   8
   Write down the anticipated possible questions for personal
   interview (HR) along with their appropriate responses. Face mock
   interviews. The cooperation of HR personnels of industries may be
   sought if possible. Videos of Mock Group Discussions and
   Interviews may be shown.

Unit 7   Formal Written Skills   4
   Write a memo, Write an effective official e-mail, write a letter of
   enquiry, letter of placing orders, and letter of complaint.

PROFESSIONAL PRACTICES –II

L	**T**	**P**	Curri. Ref. No.: CSE508
0	0	2	

Total Contact Hrs.: 30 **Total Marks: 50** **Practical:**
Theory: 0   End Exam.: 25
Tutorial: 0   P.A. : 25
Practical:30
Prerequisite: NIL
Credit : 1

UNIT TOPIC / SUB-TOPIC	Lecture Hrs.

1. **Industrial Visits:**
   Structured industrial visits to be arranged and report of the same should be
   submitted by the individual student, to form part of the team work.
   Industrial visit may be arranged in the relevant area/ industries.

2. Lectures by Professional / Industrial Expert to be arranged in **ONE** of the
   following:

   - Gadgets using digital technology
   - Architecture of handheld devices
   - State-of-art communication technologies.

   - based on information search to be organized Three nos.)

Sample path for Term III in Computer Science and Engineering.

Sl. No	Code	Course	Pre-requisite	Contact Hours / Week L	T	P	Theory End Exam	Class Test	Assign ment	Attend ance	Practical End Exam	Sessi onal	Viva voce	Total Marks	Credit
1	G105	Applied Mathematics	NIL	3	0	0	70	15	10	5	0	0	0	100	3
2	CSE401	Electrical Circuits	NIL	2	0	2	50	10	10	5	25	25	0	125	3
3	CSE402	Computer Programming Using C-II	G205B	2	0	4	70	15	10	5	25	25	0	150	4
4	G301/ G307	Soft Core I (Environmental Education)	NIL	3	0	0	70	15	10	5	0	0	0	100	3
5	CSE403	Digital Circuits	NIL	3	0	2	70	15	10	5	25	25	0	150	4
6	CSE404	Computer Arch. & Organization	NIL	3	0	0	70	15	10	5	0	0	0	100	3
7	CSE405	Communication Engineering	NIL	3	0	2	70	15	10	5	25	25	0	150	4
8	G302	Development of Life Skill-II	NIL	1	0	2	0	0	0	0	0	25	25	50	2
9	CSE508	Professional Practices – II		0	0	2	0	0	0	0	0	50	-	50	1
		TOTAL		**20**	**0**	**14**	**470**	**100**	**70**	**35**	**100**	**175**	**25**	**975**	**27**