DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
10EN201 PROFESSIONAL ENGLISH I

Credits: 2:0:0

Course Objectives
To impart basic grammar skills with special thrust on framing sentences for day to day conversation.
To train the students in language use and help improve their vocabulary.
To train the students in reading and writing skills

Unit I
Developing basic skills in Grammar- Parts of Speech- Tense forms- Concord- Articles-Voice-Infinitives- Gerunds—Modal auxiliaries- Understanding vocabulary- Word power.

Unit II
Developing skills in basic sentence patterns- Direct and indirect speech - Homophones- Note-Making- Paragraph writing- Personal letter writing- Summarizing- Punctuations- Discourse markers.

Unit III
Error Analysis- Descriptive writing- Abbreviations- Word formations- Cohesive devices- One-word substitution- Subordinating conjunction- Co-relative conjunction- Relative pronouns- Writing short speeches.

Unit IV
Instructions- Warning- Group discussions- - Writing minutes- writing recommendations- Memo writing- Understanding biography

Unit V
Essay writing- Writing official letters- If- clauses- Technical and non- technical meaning of words- Presentational skills- Body language- Role-play

Text Book

Reference Books
EN 214 BASIC FRENCH LANGUAGE

Credits: 2:0:0

Unit I
Nouns and Pronouns- Personal pronouns – Verbs- Concord – Present of regular verbs – present of frequently used verbs – direct infinitive to show preferences

Unit II
Adjectives– Types of adjectives and usage - Adverbs – use and position of frequently used adverbs - Prepositions and Conjunctions– use of prepositions of place

Unit III
Interrogative Constructions – questions indicated by rising intonation – questions starting with question words - Sentence Structure

Unit IV
Listening Skill – Pronunciation – Contextual meaning – Listening to comprehend ideas

Unit V
Reading a variety of short, simple materials – Demonstrate understanding through oral and brief written responses – Writing short expressions

Reference:
1. The Ontario Curriculum: FSL — Extended French, Grades 1–8; French Immersion, Grades 1–8, 2001

EN 216 BASIC GERMAN LANGUAGE

Credits: 2:0:0

Unit I
Introduction – Alphabets – Greetings – Countries and Languages – Pronouns – Possessive Pronouns - Verbs and their conjugations – Articles

Unit- II

Unit – III
Number system – Family – Daily routines related verbs and question verbs.

Unit – IV
Accusative and dative declensions of pronouns and articles – Modal verbs and their related grammatical structure.

Unit – V
Time and time related particles – Related vocabulary and grammar – Exercises.
Reference Books
1. Tangram Aktuell! (Max Hueber Verlag).
2. Pingpong (Maz hueber Verlag)

10EN202 PROFESSIONAL ENGLISH II

Credits: 2:0:0

Course Objectives
To impart skills in language use.
To enrich the vocabulary of students.
To enable students identify errors and frame error-free sentences
To impart reading and writing skills

Unit I
Language use-Word formation-Synonyms-Antonyms- Vocabulary building- Word Power-
Abbreviations-Acronyms-homophones.

Unit II
Language use-Error Analysis-Impersonal passive voice-Punctuations-Verb forms-Modal
Auxiliaries- Reading Skills-Extensive Reading-Intensive Reading.

Unit III
Communicative Skills-Prepositional Phrases-Gerunds-Infinitives-Imperatives-Situational
speech-practice to speak fluently-Contextual use of words-Language for various communicative
functions

Unit IV
Speaking Skills- Phonetics-Vowels - Consonants-Stress-Intonation- Phonetic Transcription-
Correct pronunciation Identification-Speeches-Group Discussion.

Unit V
Writing Skills-Creative writing - Continuous writing-Description- Parts of business letters-Types
of Business letters-Formatting of Business Letters - Editing

Text Book:
Hill.

Reference Books
1. Joseph, Maya and Sundarsingh, J. ed. Communication Skills I & II. Coimbatore,
2. Radhakrishnan, Pillai G.et.al. (2000). Spoken English for You-Level I. Chennai:
Emerald Publishers.
MA244 ALGEBRA, DIFFERENTIAL CALCULUS AND ANALYTICAL GEOMETRY

Credits: 3:1:0

Unit I: Theory of Equations
Relations between coefficients and roots. Irrational and imaginary roots – symmetric functions of the roots – transformation of equations – Reciprocal equations and formation of equation whose roots are given.

Unit II: Matrices
Characteristic equation – Eigen values and eigenvectors of a real matrix – Properties of Eigen values – Cayley Hamilton theorem – Orthogonal reduction of a symmetric matrix to diagonal form – Orthogonal matrices – Reduction of quadratic form to canonical form by orthogonal transformation

Unit III: Three Dimensional Analytical Geometry
Direction cosines and ratios – Angle between two lines – Equation of a plane – Equation of a straight line – Co-planar lines – Shortest distance between skew lines

Unit IV: Geometrical Applications of Differential Calculus
Curvature – Cartesian and polar co-ordinates – Circle of curvature – involutes and Evolutes – Properties of envelopes – Evolutes as envelope of normals.

Unit V: Functions of Several Variables

Text Book:

Reference Books:
MA245 MULTIPLE INTEGRALS, DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

Credits: 3:1:0

Unit I: Multiple Integrals
Evaluation of Multiple Integrals, Change of order of Integration, Application of Multiple Integrals to find area enclosed by plane curves and volume of solids.

Unit II: Beta and Gamma Integrals
Definition, relation connecting Beta and Gamma integrals, properties, evaluation of definite integrals in terms of Beta and Gamma functions.

Unit III: Ordinary differential Equation
Simultaneous linear equations with constant coefficients – Linear equations of higher order with constant coefficients – Homogeneous equation of Euler type – Method of variation of parameters.

Unit IV: Vector Calculus
Gradient, Divergence, Curl – Line, surface & volume integrals – Statements of Green’s, Gauss divergence and stokes’ theorems (without proof) – verification and applications.

Unit V: Laplace Transforms
Transforms of simple functions – Basic operational properties – Transforms of derivatives and integrals – Initial and final value theorems – Inverse transforms – Convolution theorem – Periodic function – Applications of Laplace transforms of solving linear ordinary differential equations upto second order with constant coefficients and simultaneous equations of first order with constant coefficients.

Text Book:

Reference Books:

PH105 APPLIED PHYSICS

Credits: 3:0:0

Unit I:
Particles and waves
Shroedinger’s wave equation (Time dependant and time independent equations) - Applications: particle in a box,

Unit II: Structure of solids
Classification of solids - Fundamental terms of crystallography - Lattice, basis, Unit cell, Crystallographic axis, primitives - Types of crystals - Bravais Lattices, miller indices - Unit cell characteristics of Simple cubic, BCC, FCC and HCP systems.

Nano Materials
Preparation of Nano Materials - Bottom up, top down approaches - Properties and applications of Carbon nano tubes

Unit III: Dielectrics
Basic Definitions - Electric field intensity, Electric flux density, Dielectric parameters - dielectric constant - Experimental determination of dielectric constant - Dipoles - Dipole moment - polar and non polar dielectrics, polarization - Types of polarization - Internal field - Clausius mosotti equation - Dielectric loss - dielectric breakdown - dielectric properties.

Semiconductors: Classification of solids on the basis of band theory - Conductors, Insulators and semiconductors. Classification of semiconductors - Intrinsic and Extrinsic semiconductors - Solar cells - Light emitting diodes - Liquid crystal display

Unit IV Lasers

Fibre optics: Principle of optical fibre - Propagation in optical fibres - Acceptance angle - Numerical aperture - Structure of optical fibres - Fibre optic materials - Classification of optical fibres - Applications - Optical fibres for communication - Fibre optic sensors - Temperature sensor

Unit V Acoustics
Classification of sound, Characteristic of musical sound - Loudness - Weber and Fechner’s law - Decibel - Absorption coefficient - Reverberation time - Sabine’s formula (growth and decay), Factors affecting acoustics of buildings and their remedies

Ultrasonics-classification: of ultrasonic waves - properties of ultrasonic waves - ultrasonic production - Magnetostriction and piezoelectric methods, Acoustic grating, SONAR, NDT, applications in medicine and industry

Recommended Text Book

Reference Books:

09PH101 APPLIED PHYSICS LAB

Credits: 0:0:2

Course Objective:

- To train engineering students on basis of measurements and the instruments
- To give practical training on basic Physics experiments which are useful to engineers
- To equip the students with practical knowledge in electronic, optics, and heat experiments

Course outcome:
Demonstrate the practical skill on measurements and instrumentation techniques of some Physics experiments.

List of experiments:

1. Rigidity Modulus of the wire - Torsional Pendulum
2. Young’s Modulus of a beam- Non-uniform bending
3. Thermal Conductivity of a bad conductor-Lee’s Disc
4. Radius of curvature of a lens – Newton’s Rings
5. Refractive Index of Prism-Spectrometer
6. Wavelength of mercury source- Spectrometer Grating method
7. Coefficient of Viscosity of a liquid by Poiseuille’s method
8. Frequency determination of a tuning fork- Melde’s string
9. Particle size measurement-Laser diffraction method
10. Discharge of a capacitor
11. Thickness of a glass plate- Single optic lever
12. Characteristics of Zener diode
13. Efficiency of Solar cell
14. Ultrasonic interferometer

HoD can choose any 10 experiments from the above list at the beginning of the course in each Semester.

10PH201 - ENGINEERING PHYSICS

Credits: 2:0:0

Course Objectives:
- To help to prepare the Engineering students, a stronger foundation in the classical physics and Dynamics of particles
• Greater emphasis through on the role of reference frames in Newton’s laws, force laws
• A clear analysis of the concepts of Heat, Energy and laws of Thermodynamics (quantitatively).
• To provide the understanding of concepts of electricity and magnetism.

**Course Outcome:**
Student understands the classical portions of the Electricity and Magnetism and special momentum to Electromagnetic introduction

**Unit I : Particle Dynamics**

**Unit II : Heat And Thermodynamics**
Heat And Work, The First, Second and Third laws Of Thermodynamics, Some Applications

**Unit III : Magnetism**

**Unit IV: Electrostatics**
Electric Field And Electric Intensity, Electrostatic Potential, Gauss’s Theorem, Applications Of Gauss’s Theorem, Mechanical Force Experienced By Unit Area Of A Charged Field, Electrostatic Potential At A Point Due To A Dipole

**Unit V : Electromagnetic Induction**

**Text Books:**
2. Electricity & Magnetism, Brijlal & Subramaniam S. Chand and Co 2004

**Reference Books:**
1. University Physics, Sears and Zemansky –Pearson Addison Wesley,2007
2. Fundamentals of Physics, an introductory course, David G. Martindale, Robert W. Heath, D.C. Heath, Canada, 1987
4. Electricity and Magnetism, William C. Robertson, NSTA press, 2005

CH106 APPLIED CHEMISTRY

Credits: 3:0:0

Unit I: High Polymers

Unit II: Water Technology

Unit III: Fuels and Combustion

Unit IV: Electrochemistry
Types of corrosion – Wet or electrochemical corrosion – Types – factors influencing corrosion – Corrosion control methods

Unit V: Emerging Trends in Chemistry
Basics of Nanotechnology - Nanomaterials – Types: Nanowires, Nanotubes – Applications
Chemical aspects of Biotechnology – Fermentation – Manufacture of ethyl alcohol and acetic acid by fermentation – Deamination
Fundamentals of Semiconductor Technology – Semiconductor materials – Basic fabrication steps – oxidation – photolithography and etching – diffusion and ion implantation - metallization
Text Book:

Reference Books:
1. S. Glasstone and D. Lewis – “Elements of Physical Chemistry”, McMillan Co. of India Ltd., 2002

09CH104 – APPLIED CHEMISTRY LAB

Credits: 0:0:2

Objectives:
1. To understand the principles of estimation in acidimetry, alkalimetry and permanagnometry titrations
2. To understand gravimetric principles involved in complexometric titration
3. To understand the principles of potentiometry, conductometry and pH measurements
4. To understand the principles of spectrophotometry and flame photometry

List of Experiments:
1. Estimation of Hydrochloric acid
2. Estimation of Sodium Hydroxide
3. Estimation Fe$^{2+}$ ions
4. Estimation of total, permanent and temporary hardness of Water Sample
5. Estimation of alkalinity in water sample
6. Estimation of dissolved oxygen
7. Estimation of Iron in water sample by spectrophotometry
8. pH measurements for acid – alkali titration
9. Conductometric estimation of an acid
10. Potentiometric estimation of Fe$^{2+}$ Ions
11. Determination of single electrode potential by potentiometry
12. Determination of rate of corrosion of mild steel by by weight loss method
13. Estimation of sodium present in water by flame photometry
Reference Books


09CH201 – ENVIRONMENTAL STUDIES

Credits: 3:0:0

Objectives:
1. To acquire the knowledge of environmental studies, it’s need & importance
2. To understand the concept, structure and function of different ecosystems
3. To know about pollution problems and green technology
4. To develop a sense of responsibility about the role of students in fostering the idea of learning to live in harmony with nature

Unit I - Natural resources, ecosystems and biodiversity

Unit II – Air pollution and global issues

Unit III – Issues related to other environmental pollution aspects and green technology
Water pollution - sources – characteristics – BOD, COD - pollutants and their effects – heavy metal pollution – inorganic and organic pollutants control methods - Advanced waste water treatment techniques - Basic aspects of soil pollution - marine pollution - noise pollution - thermal pollution - nuclear hazards - Causes, effects and control measures - solid waste management: causes, effects and control measures of urban and industrial solid wastes
Green chemistry and green technology – principles of sustainable and green chemistry - miscelle templated silica as catalyst in green chemistry – biocatalysis – bioproduction of
catalysts in industries – basics of clean energy technology for the future – fuel cells, wind power, solar power

**Unit IV – Environmental Legislation**

**Unit V - social issues and the environment**

**Text books:**
2. Deswal S and Deswal A,’A basic course in Environmental studies’, Dhanpat Rai & Co, First edition, Delhi, 2004

**Reference Books:**

**09ME101  BASIC MECHANICAL ENGINEERING**

**Credits: 2:0:0**

**Objective:**
To provide knowledge about IC Engines, External combustion Engines, boilers, power plants, metal forming, metal joining, machining process and materials. To understand about CAD and modern design softwares in the mechanical engineering.
UNIT - I
Engine-External combustion engine – Working of Steam Engine – Steam Turbine –
Impulse turbine & reaction turbine – Boilers fire tube and water tube boiler – Cochran
boiler – Babcock & Wilcox boiler – Internal Combustion Engine – Working of petrol and Diesel
Engine – Difference between two stroke and four stroke engines.

UNIT - II
Conventional power plants – Hydro, Thermal, Nuclear power plants – Diesel and Gas
Turbine power plants; Non-conventional power plants – Solar, wind and tidal power
plants – Geothermal power plant – Ocean Thermal Energy conversion power plant.

UNIT - III
Load – Types of load –stress and strain – Types of stresses and strains –Stress strain curve of
ductile materials- Introduction of Mechanical Engineering Software Packages.

UNIT – IV
Metal casting and forming process – Introduction – advantages of casting – patterns –
welding, gas welding

UNIT – V
Nonferrous metals and alloys.

Text Books:

Reference Books:
1. I.E. Paul Degarmo, J.T. Black, Ronald A. Kosher, “Material and Processes in
2. Dr. O.P. Khanna, “A Text Book of Materials Sciences and Metallurgy”, Dhanpat

09EC218 BASIC ELECTRONICS

Credits: 3:0:0

Objective: To know the basics about semiconductor, integrated circuits and communication
system.
Outcome: Students will get overview about the basics of electronics.
UNIT I
Introduction to Semiconductor
Covalent bond – N type & P type semiconductor – conduction in semiconductor – semiconductor devices: diode, transistor, FET, MOSFET, UJT.

UNIT II
Integrated Circuits

UNIT III
Digital Systems
Number system – Boolean algebra – logic gates –truth table - combinational circuit -4 x 1 multiplexer – 1 x 4 demultiplexer - digital computer principles.

UNIT IV
Communication
Basic block of communication system – need for modulation – Derivation of AM and FM signal - Amplitude and Frequency Modulation (Balanced modulator and varactor diode modulator)- Demodulation(AM diode detector and balanced slope detector.

UNIT V
Communication systems
Block diagram of AM and FM transmitter - Superheterodyne receiver – satellite communication – Fibre optic communication

Text Book

Reference Books

09EE101 BASIC ELECTRICAL ENGINEERING
Credits: 3:0:0
Course Objectives
- To impart the basic knowledge about the Electric and Magnetic circuits.
- To inculcate the understanding about the AC fundamentals.
- To understand the working of various Electrical Machines.
- To know about various measuring instruments and house wiring.
Unit I: DC CIRCUITS

Unit II: MAGNETIC CIRCUITS

Unit III: AC FUNDAMENTALS

Unit IV: ELECTRICAL MACHINES
Working principle, operation and application of DC Generator, DC Motor, Transformer, Three Phase Induction motor ,Single phase Induction motor, Alternator. (Quantitative approach)

Unit V: MEASURING INSTRUMENTS AND HOUSE WIRING
Wiring materials and accessories – Types of wiring – Fluorescent lamp wiring – stair case wiring – basic principles of earthing – layout for a residential building.

Course Outcome
After the completion of the course, the student should be able
- To predict the behavior of any electrical and magnetic circuits.
- To identify the type of electrical machine used for that particular application.
- To wire any circuit depending upon the requirement.

Text Book

Reference Books
CS101 PROGRAMMING IN C

Credits: 4:0:0

Unit I
Introductory Concepts - Introduction to Computers – What is a Computer – Block Diagram of Computer – Computer Characteristics – Hardware vs Software – How to Develop a Program – Modes of Operation – Types of Programming Languages – Introduction to C – Desirable Program Characteristics - Introduction to C Programming - The C Character Set – Writing First Program in C - Identifiers and Keywords – A More Useful C Program – Entering the Program into the Computer – Compiling and Executing the Program - Data Types – Constants – Variables and Arrays – Declarations – Expressions – Statements – Symbolic Constants (Chapters 1,2)

Unit II

Unit III

Unit IV

Unit V
Additional Features of C – Enumerations – Command Line Parameters (Chapters 11, 12, 14.1, 14.2)


09CS217 PROGRAMMING IN C LAB

Credits: 0:0:2
1. Write a Program to find the Palindrome.
2. Write a Program using switch statement with the multiple cases (Fibonacci Series, Factorial for the Given Number, Armstrong Number or Not, Prime or Not)
3. Sorting of Numbers Using Arrays
4. Printing 10 Numbers both in Ascending and Descending.
5. Pyramid
7. Counting Number of Characters, Number and Special Characters In Given String.
8. Student Record Using Structure.
9. Print Multiplication Table In Reverse Order Using For, While Do While.
11. Data Files
12. Data Files.

12 Experiments will be notified by the HOD from time to time. A tentative list is mentioned above.

MA 246 COMPLEX ANALYSIS, STATISTICS AND Z-TRANSFORMS

Credit: 3:1:0

Unit I: Analytic Functions
Cauchy Riemann equations – Properties of analytic functions – Determination of harmonic conjugate – Milne – Thomson’s method – Conformal mappings w = z + a, az, 1/z, z² , and bilinear transformation.

Unit II: Complex Integration
Cauchy’s theorem – Statement and application of Cauchy’s integral formulae – Taylor’s and Laurent’s expansions – Singularities – Classification – Residues – Cauchy’s residue theorem – Contour integration – Circular and semi Circular contours (excluding poles on real axis)

Unit III: Statistics
Moments, skewness and kurtosis (based on moments only) – Linear correlation-coefficient of correlation – rank correlation and regression lines – Theoretical Distributions – Binomial – Poisson – Normal.
Unit IV: Testing of hypothesis
Tests based on large samples - Small samples: t mean and difference of means – $\chi^2$ test for goodness of fit and attributes and F - distribution.

Unit V: Z – Transforms
Z-transforms of standard functions, inverse Z-transform (Partial fraction expansions and residues), properties of Z-transform, Solution of difference equations.

Text Book:

Reference books:

10EC202 ELECTRIC CIRCUIT ANALYSIS

Credits: 3:1:0

OBJECTIVES:
• To understand the basic concepts of electric circuits
• To study the various techniques which can be used to analyse electric circuits
• To understand the nature of the responses of electric circuits

OUTCOME:
• Make the students capable of applying the knowledge of circuit theory in other engineering subjects

UNIT I
Basic Circuit Concepts
Kirchoff's Laws -VI relationships of R, L and C -independent sources - dependent sources – simple resistive circuits -network reduction, Series and parallel circuits reduction, Star delta transformation voltage division rule -current division rule -source transformation.

UNIT II
Sinusoidal Steady State Analysis
Phasor- sinusoidal steady state response -concepts of impedance and admittance -analysis of simple circuits- power and power factor -series resonance and parallel resonance – bandwidth and Q factor. Solution of three-phase balanced circuits , Star connected load and delta connected load-power measurements by two wattmeter- solution of three phase unbalanced circuits, Star connected and delta connected load.
UNIT III
Mesh-Current And Node-Voltage Methods
Formation of matrix equations and analysis of complex circuits using mesh-Super mesh analysis-
nodevoltage analysis-Super node analysis- mutual inductance- coefficient of coupling -ideal
transformer.

UNIT IV
Network Theorems And Applications
Superposition theorem -reciprocity theorem –compensation theorem -substitution theorem -
maximum power transfer theorem -Thevenin's theorem. -Norton's theorem and Millman's
theorem with applications.

UNIT V
Transient Analysis
Forced and free response of RL, RC and RLC circuits with D.C. and sinusoidal excitations-
Forced and free response of RL, RC and RLC circuits with D.C. and sinusoidal excitations using
Laplace transform technique.

TEXT BOOKS
1. Paranjothi S.R., 'Electric Circuit Analysis', New Age International Ltd. , Delhi, 2nd

REFERENCE BOOK

10EC201 ELECTRON DEVICES
Credits: 3:0:0

Objectives:
- To know about the internal function of Electron devices
- To know about the advanced semiconductor devices
- To know about the practical applications of devices.

Outcome:
- Able to design practical circuits and to analyse various components

UNIT I
Electron Ballistics
Charged Particles – Constant electric Field – Two dimensional motions – Electrostatic
Deflection in CRT – CRO – Force in magnetic Field – Motion in a magnetic field – Magnetic
deflection in CRT – Combined electric and Magnetic Field.
UNIT II
Theory of PN Junction

UNIT III
Theory of semiconductor devices
Forward and Reverse characteristics of pn diode– Diode Equation– EberMoll equation – Transistor hybrid model, determination of hybrid parameters, measurement of hybrid parameters, Miller’s theorem.

UNIT IV
Special semiconductor diodes

UNIT V
Special Semiconductor Devices
Photo diodes –Photo transistors – LED – LCD – optocouplers –Digital electronic display- plasma display, nano crystal display.

TEXT BOOKS

REFERENCE BOOKS

EC284 DIGITAL ELECTRONICS
Credits: 3:1:0
Unit I : Number Systems & Boolean Algebra
Unit II : Combinational Logic Design

Unit III : Counters & Registers

Unit IV: Synchronous Sequential Logic Design
Basic models of sequential machines – concept of state table – state diagram – state reduction through partitioning & implementation of synchronous sequential circuits

Unit V: Digital Logic Families
LOGIC FAMILIES: RTL, DTL, TTL families, schottky – clamped TTL, Emitter Coupled (ECL), Integrated Injection Logic (IIL), MOS inverters, CMOS inverters, comparison of performance of various logic families.

Text Book

Reference Books

09EC221 ELECTROMAGNETIC FIELDS

Credits: 3:1:0

Objective
To get knowledge about electric and magnetic fields

Outcome
Students can make use of electromagnetic field concepts in wave guide applications.

UNIT I
Static Electromagnetic Fields
UNIT II
Static Magnetic Field

UNIT III
Electric Field In Dielectrics

UNIT IV
Magnetic Field In Ferromagnetic Materials

UNIT V
Time Varying Electric And Magnetic Fields

Text Books

Reference Book

10EN203 ADVANCED ENGLISH

Credits: 2:0:0
Course Objectives
- To make the learners aware of the importance of correct English both in writing and speaking contexts
- To enable the learners to acquire the additional skills required to perfect their language competency

UNIT I
Role of language in communication- basics of communication – types and barriers — comparison of oral and written communication – error analysis in English grammar
UNIT II
Body language and communication in English – types of non-verbal communication – oral presentation exercises – telephone conversation – communication errors in English

UNIT III
Role of English in interviews - interview techniques – question types – interpersonal communication – vocabulary for specific interview situations

UNIT IV
Business letters: Enquiry letter, Quotation letter, Purchase letter & Sales letter – Sales advertisement – headline writing - overcoming errors in sentence construction

UNIT V

Text book:

Reference Books:

09EC230 DIGITAL ELECTRONICS LAB

Credits: 0:0:2

1. Realization of logic gates
2. Half adder & full adder
3. Half subtractor & full subtractor
4. Multiplexer & demultiplexer
5. Encoder & decoder
6. Odd and even parity generator and checker
7. Bcd to excess three coverter
8. Code conversion
9. Flip flops
10. Shift register
11. Counters
12. Comparator

10EC206 ELECTRON DEVICES LAB

Credits: 0:0:2

1. Study of CRO
2. Characteristics of PN Junction diode, Zener diode
3. Characteristics of Photo diode
4. Characteristics of BJT
5. Characteristics of Triac, SCR
6. DC Analysis of Electric Circuits
7. AC Analysis of Electric Circuits
8. Rectifiers
9. Characteristics of UJT, FET

Implementation of the above using PSPICE & Hardware

MA247 FOURIER SERIES, TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

Credits: 3:1:0

Unit I: Fourier series
Euler’s formula – Dirichlet’s conditions convergence statement only – change of interval odd and even functions. Half range series – RMS value, Parseval’s formula – complex form of Fourier series – harmonic analysis.

Unit II: Partial Differential Equations
Formation of equations by elimination of arbitrary constants and arbitrary functions – solution of equations – general, particular and complete integrals – Lagrange’s linear equation – standard type of first order equations – second order and higher order equations with constant coefficients, homogeneous and nonhomogeneous equations.

Unit III: One-Dimensional Wave Equations and Heat Equation
One dimensional wave equation – transverse vibration of finite elastic string with fixed ends – boundary and initial value problems – Fourier series solution. One dimensional heat equation – steady and unsteady states, boundary and initial value problems – Fourier series solution. (Proofs and derivations not needed)

Unit IV: Two Dimensional Heat Equation
Two dimensional heat equations – steady state heat flow in two dimensions – Laplace Equations in Cartesian and polar co ordinates Fourier series solution. (Proofs and derivations not needed)
Unit V: Fourier transforms
The infinite Fourier transform – sine and cosine transforms – properties (Proof not needed) –
inversion theorem – Finite Fourier Transform – sine and cosine transforms – convolution
theorem – Parseval’s identity – transform of derivatives. (Proofs and derivations not needed)

Text Books:
   III, 1996.

Reference Books:

EC288 SOLID STATE CIRCUITS

Credits: 4:0:0

UNIT I: Rectifiers and Filters
Diode as Rectifiers – Half wave rectifier – Full wave rectifier – ripple factors – DC and AC
components in rectifiers – Capacitor and inductor filters – Analysis and design of L section and
Pi section filters – Regulators: Voltage and current regulators – Short circuit and over load
protection.

UNIT II: Transistor And FET Biasing
Transistor Biasing: Location of the Q point – Fixed bias circuit – Collector to base circuit – Self
bias circuit – Graphical DC bias analysis – Design of DC bias circuit.
FET biasing - Self biasing – Voltage feedback biasing.

UNIT III: Amplifiers
Frequency response – RC coupled and Transformer coupled amplifiers – Single stage –
Multistage amplifiers – Wideband amplifiers – Cascode – Video amplifiers – Peaking circuits –
Power amplifiers: Class A, AB, B and class D amplifiers – Distortion – Push pull amplifiers –
Complementary symmetry.

UNIT IV: Feedback Amplifiers & DC Amplifiers
Positive and Negative feedback – Current and Voltage feedback – Effect of feedback on gain –
Input and Output impedance – Noise and Distortion. DC amplifiers: Drift in amplifiers –
Differential amplifiers – Chopper Stabilization.

UNIT V: Oscillators And Tuned Amplifiers
Barkhausen criterion – RC and LC Oscillators – Crystal oscillators – Tuned amplifiers – Single
tuned – Double tuned – Stagger tuned.
Text Books

Reference Books

09EC220 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

Credits: 3: 1: 0

Objective
To get knowledge about IC fabrication and applications

INFERENCEx
Students will be able to design circuits using ICs

UNIT I
Integrated Circuit Technology

UNIT II
OP-AMP Characteristics And Applications

UNIT III
Comparators And Signal Generators
Comparators, regenerative comparators, input output characteristics, astable multivibrator, Monostable multivibrator, Triangular wave- generators, RC-phaseshiftoscillator, Wein’s bridge oscillator.

Voltage Regulator
Series op amp regulator, IC voltage regulator, 723 general purpose regulator, Switching Regulator.
UNIT IV
Active Filters, Timers And Multipliers
Low pass, High pass, Band pass and Band Reject filters, Butterworth, Chebychev filters, first and second order filters-switched capacitor filters. 555 Timer functional diagram, monostable and astable operation, multiplier-application.

UNIT V
PLL, ADC And DAC
PLL- basic block diagram and operation, capture range and lock range simple applications of PLL, AM detection, FM detection and FSK demodulation. Weighted resistor DAC, R-2R and inverted R-2R DAC, monolithic DAC. Flash ADC, counter type ADC, successive approximation ADC, dual slope ADC, conversion times of typical ADC.

Text Book

Reference Books

EE261 C++ AND DATA STRUCTURES
Credits: 3:0:0

Unit I: Introduction to Data Structures
Linked list, Single linked list, Doubly linked list, Circular Linked list, Stack, Queue, Trees

Unit II: Sorting and Searching Techniques
Sorting, Bubble sort, Insertion Sort, Selection Sort, Quick Sort, Heap Sort, Merge Sort. Searching, Binary Tree Search, Linear Search, Binary Search.

Unit III: Objects and Classes
A Simple class, C++ objects as physical objects, C++ Objects and Data types, Object as function argument, constructors, as function argument, Overloaded Constructors, Copy Constructors, Returning objects from functions, structures and classes, Static class data, const and classes, Arrays and Strings.

Unit IV: Operator Overloading
Overloading Unary and Binary Operator, data conversion, and Pitfalls, Inheritance: derived class and base class, derived class constructors, Overloading member functions, class hierarchies, public and private inheritance, level of inheritance, multiple inheritance. Pointers: address and pointers, pointers and arrays, pointer and c-type strings, new and delete operator, pointers to pointer.
Unit V: Virtual Functions
Virtual functions, Friend functions, Static functions, this pointer. Streams and files: stream classes, stream errors, disk file I/O with streams, file pointers, error handling in file I/O. Templates and exception: function templates, class templates, exceptions.

Text Books

Reference Books

10VE201 VALUE EDUCATION

Credits: 2:0:0

Course Objectives:

1. To give an understanding of life in all its complexities and to provide practical opportunities and mold students to meet the needs of the people.
2. To sharpen the capacity of the student in enabling them to make right moral and ethical choices,
3. To develop professionals with social concern reaching out to the nation as leaders and serving the needy with divine grace and power.

UNIT-I
Introduction: Vision and Mission of Karunya. Value Education, Purpose and priority areas of Value Education. Importance of Values in Life – what is a Value system? Types of values, Value inculcation process, Clarifying values - Importance of Values in Life – what is a Value system? What kinds of values need to be inculcated eg. Ethical, moral and spiritual instead of materialistic values, value inculcation, trend of values such as a permissive culture. Character Building – advantages of good character, importance of trust, honesty, integrity, morality, and reliability as qualities of a good character. Building Relationship – Objectives, Ways to improve relationship, Issues that hinder relationship, Tools for effective relationship

UNIT- II
Personality Development– definition, types and ways to improve Personal effectiveness. Purpose and philosophy of Life – Learning the purpose driven life, Decision making skills, Introspection, Moralization of Desires. Leadership – Qualities of a good leader, Types and
Principles. Communication – Principles and Types, advantages and disadvantages to communication. Communication skills

UNIT-III

Attitude – Definition, types, factors and steps to build positive attitude, benefits of positive attitude and consequences of negative attitude. Self-Esteem – Definition, Types, Characteristics of high and low self-esteem, Causes of low self-esteem and steps to build high self-esteem.

UNIT – IV

UNIT – V

Reference Books:

10VE202 VALUE EDUCATION

Credits: 2:0:0

Course Objectives:
1. To give an understanding of life in all its complexities and to provide practical opportunities and mold students to meet the needs of the people.
2. To sharpen the capacity of the student in enabling them to make right moral and ethical choices,
3. To develop professionals with social concern reaching out to the nation as leaders and serving the needy with divine grace and power.

UNIT-I
Introduction: Vision and Mission of Karunya. Value Education, Purpose and priority areas of Value Education. Importance of Values in Life – what is a Value system? Types of values, Value inculcation process, Clarifying values . Importance of Values in Life – what is a Value system? What kinds of values need to be inculcated eg. Ethical, moral and spiritual instead of materialistic values, value inculcation, trend of values such as a permissive culture. Character Building – Advantages of good character, Importance of trust, honesty, integrity, morality, and reliability as qualities of a good character. Building Relationship – Objectives, Ways to improve relationship, Issues that hinder relationship, Tools for effective relationship

UNIT-II
Personality Development- Definition, Types and ways to improve Personal effectiveness. Purpose and philosophy of Life – Learning the purpose driven life, Decision making skills, Introspection, Moralization of Desires. Leadership – Qualities of a good leader, Types and Principles. Communication – Principles and Types, advantages and disadvantages to communication. Communication skills

UNIT-III

UNIT – IV

UNIT – V
Life Integrity – Understanding Personality, Self-centered and Christ-centered Personality, Integrity in Time, Talent and Treasures.

Reference Books:


EE 295 NETWORK ANALYSIS AND SYNTHESIS

Credits: 3:1:0

Unit I: S-Domain Analysis
S-domain network -driving point and transfer impedances and their properties -transform network analysis -poles and zeros of network functions -time response from pole-zero plots.

Unit II: Frequency Domain Analysis
Amplitude and Phase Characteristics from pole zero plot- Responses due to exponential and sinusoidal sources- Magnitude and phase plots for RL & RC networks- Complex Loci for RL & RC and RLC networks- Plots based on s-plane phasors.

Unit III: Network Topology
Network graph, Tree, incidence matrix – fundamental cut-sets and fundamental loops -tie set and cut-set schedules -v-shift and I-shift - Formulation of equilibrium equation on loop basis and node basis, Formulation of equilibrium equation in matrix form- Duality, Construction of a dual of a network.

Unit IV: Two-Port Networks & Filters
Characterization of two-port networks in terms of z, -y, h-and T, g and inverse T -parameters - Relations between network parameters- Network Equivalents -Analysis of T, π , ladder, bridged-T and lattice networks -Transfer function of terminated two-port networks. Filters and attenuators -Design of constant -k, m-derived and composite filters Design of symmetrical and asymmetrical attenuators (T and π)

Unit V: Elements of Network Synthesis
**Text Book**

**Reference Books**

**10EC207 ELECTRONICS AND INTEGRATED CIRCUITS LAB**

**Credits: 0:0:2**

**LIC Experiments**

1. Design of Basic Operator circuits using op-amp
   a. Adder
   b. Subtractor
   c. Differentiator
   d. Integrator
2. Design of astable multivibrator and Schmitt trigger using 555 Timer
3. Design of active filters using op-amp
4. Design of Weinbridge Oscillator
5. Design of Digital Analog Converter
6. Precision rectifiers using op-amp

**Electronics Experiments**

7. Half wave & Full wave Rectifiers
8. Voltage Regulator
9. Single stage amplifier
10. Single tuned Amplifier
11. RC Phase shift Oscillator
12. Differential Amplifier
Objective
To get knowledge about various modulation techniques, transmitters, receivers

Inference

Outcome
Students can design communication circuits

UNIT I
Base Band Signals and Systems
Introduction, Definition of communication, Communication system block diagram – Need for wireless communication – Need for modulation – General definition of modulation – Types of modulation. General concepts about base band signal and bandwidth of signals.

UNIT II
Analog Modulation Techniques

UNIT III
Modulation and Demodulation Techniques
Amplitude Modulation: Introduction – generation of AM signal – low level and high level modulation – square law diode modulation – AM in amplifier circuits – suppressed carrier AM generation (Balanced Modulator, Ring Modulator, Product Modulator)
UNIT IV
AM & FM Transmitters and Receivers
AM Transmitter and Receiver: Allocation of frequency for various services- AM transmitters-
block schematic- high level and low level transmitters- class C- R.F tuned amplifiers- frequency
multiplier- SSB transmitters- ISB transmitters. Tuned radio frequency receivers – Super
heterodyne receiver- Basic elements of AM super heterodyne receiver: - RF amplifier, Classes of
operation of RF amplifier, Image frequency rejection – frequency conversion – IF amplifier –
tracking and alignment – merits and demerits of different receivers. Characteristics of Receivers.
FM Transmitter and Receivers: Block diagram of FM transmitter and methods of frequency
stabilization – Armstrong FM transmitter system – Pre-emphasis. Block diagram of FM receiver –
De-emphasis – RF amplifier – AFC – Diversity reception techniques – Spurious response in
receivers.

UNIT V
Noise
Noise and Interference-Thermal and Shot noise-Signal to Noise ratio - Noise figure – Noise
temperature. Noise in AM and FM: SSB-SC - calculation of output signal to noise ratio. DSBS
Calculation of output signal to noise ratio-figure of merit-frequency modulation-calculation of
output signal to noise ratio-comparison of SNR with respect to AM and FM.

Text Books

Reference Books
Reprint, 2003

EC280 TRANSMISSION LINES AND WAVE GUIDES

Credits: 4:0:0

Article I. Unit I: Transmission Line Theory
Different types of transmission lines – Characteristic impedance – The transmission line as a
cascade of T-Sections - Propagation Constant.
General Solution of the transmission line – The two standard forms for voltage and current of a
line terminated by an impedance – physical significance of the equation and the infinite line –
The two standard forms for the input impedance of a transmission line terminated by an
impedance – reflection coefficient – wavelength and velocity of propagation.
Waveform distortion – distortion less transmission line – The telephone cable – Inductance
loading of telephone cables.
Input impedance of lossless lines – reflection on a line not terminated by characteristic
impedance - Transfer impedance – reflection factor and reflection loss – T and \( \Pi \) Section
equivalent to lines.
Article II. Unit II: The Line at Radio Frequencies
Standing waves and standing wave ratio on a line – One eighth wave line – The quarter wave line and impedance matching – the half wave line.
The circle diagram for the dissipationless line – The Smith Chart – Application of the Smith Chart – Conversion from impedance to reflection coefficient and vice-versa. Impedance to Admittance conversion and viceversa – Input impedance of a lossless line terminated by an impedance – single stub matching and double stub matching.

Article III. Unit III: Guided Waves

Article IV. Unit IV: Rectangular Waveguides

Article V. Unit V: Circular Wave Guides and Resonators
Bessel functions – Solution of field equations in cylindrical co-ordinates – TM and TE waves in circular guides – wave impedances and characteristic impedance – Dominant mode in circular waveguide – excitation of modes – Microwave cavities, Rectangular cavity resonators, circular cavity resonator, semicircular cavity resonator, Q factor of a cavity resonator for TE101 mode.

Text Books
1. J.D.Ryder “Networks, Lines and Fields”, PHI, New Delhi, 2003. (Unit I & II)

Reference Books

EC289 PULSE AND WAVE SHAPING CIRCUITS

Credits: 4:0:0

Unit I: Linear Wave Shaping Circuits
UNIT II : Bistable And Schmitt Trigger Circuits

UNIT III : Monostable And Astable Circuits

UNIT IV : Voltage And Current Time Base Generators

UNIT V : Blocking Oscillator Circuits And Sampling Gates

Text Book

Reference Books

EC285 SIGNALS AND SYSTEMS

Credits: 3:1:0

Unit I: Introduction
Continuous Time (CT) signals – CT signal operations – Discrete Time(DT) signals – Representation of DT signals by impulses – DT signal operations – CT and DT systems – Properties of the systems – Linear Time Invariant(LTI) and Linear Shift Invariant(LSI) systems – Continuous and Discrete Convolutions – CT system representations by differential equations – DT System representations by difference equations.
Unit II: Fourier Analysis of Ct Signals and Systems

Unit III: Sampling and Laplace Transform

Unit IV: Fourier Analysis of DT Signals and Systems

Unit V: Transform Operations of DT Signals and Systems

Text Books

Reference Books

09EC233 MICROPROCESSORS AND MICRO CONTROLLERS

Credits: 4:0:0

Objective
To learn about the basics of microprocessors and microcontroller with applications.

Outcome
On successful completion of the subject, students can able to write the assembly language coding for various applications

UNIT I: 8085 Microprocessor

UNIT II: 8086 Microprocessor
Organization of 8086 microprocessor – memory segmentation – Addressing bytes and Words – Address formation –Address modes in 8086 – Assembly language programming – Minimum mode and maximum mode

UNIT III : Microprocessor Interfacing techniques:
Programmable parallel ports-8255 PPI -8253 programmable interval timer. 8251A Programmable communication interface -8279 Programmable Keyboard/display interface- - 8259A Programmable interrupt controller-

UNIT IV: Microcontroller 8051
Organization of 8031 and 8051 microcontrollers – I/O ports-External memory – – Interrupts – Instruction set – Addressing Modes – Assembly language programming,

UNIT V: Applications
Counter and Timers – Serial data input and output – Interrupts – simple applications - LCD, Keyboard interfacing, ADC, Sensor interfacing and Signal conditioning,

Text Books

Reference Books
10MS202 BUSINESS ENVIRONMENT

Credits: 2:0:0

Objectives
To understand the overall business environment and evaluate its various components in business decision making.

Learning Outcome:
The course helps the students to familiarise with the nature of business environment and its components. The course contents facilitate the students to develop conceptual framework of business environment and generate interest in international business.


Unit IV - Financial system – monetary and fiscal policies – credit market – money market and capital market- nature and constituents –industrial financing institutions (an overview).


Text Books

09MS209 MANAGERIAL SKILL

Credits: 2:0:0

Unit: I – (5 hrs)
Creativity - Basic concepts – Mental Abilities - Barriers to creativity – Convergent and Divergent thinking - Improving creativity – Creative Problem Solving methods – Steps to creative problem solving- Games on Creativity
Unit: II – (6 hrs)

**Governance**
- Case study of effective governance models.

Unit III – (7 hrs)

**Team Building & Conflict Management**
- Groups and Teams – Teams basics – Stages of Team building – Forming, Storming, Norming, Performing, Adjourning – Characteristics of effective teams – **Conflicts** - Positive and Negative effects of conflict – Types and stages of conflict – Conflict Management styles - Role plays

Unit: IV – (7 hrs)

**Group Discussion & Personal Interview**

Unit IV – (5hrs)


**Practical Sessions:**
- Resume writing, Group Discussion, & Interview.

**Recommended Text Book**

**Reference Books:**
3. *Jerald Greenberg, Robert A. Baron / Carol A. Sales / Frances A. Owen / Verlag (1999)* Behaviour in Organizations: Pearson Education

**09EC226 ELECTRONICS AND COMMUNICATION LAB**

**Credits:** 0:0:2
1. Amplitude modulation
2. Diode detection
3. Frequency modulation
4. Pre-emphasis and de-emphasis
5. Pulse amplitude modulation
6. IF amplifier
7. Attenuators
8. Equalizer
9. Pulse duration modulation
10. Study of sampling theorem
11. Monostable multivibrator
12. Astable multivibrator
13. Clippers and clampers

09EC232 MICROPROCESSOR AND MICROCONTROLLER LAB

Credits: 0:0:2

Any 10 experiments.
1) Programs involving Data Transfer instructions
2) Programs involving Arithmetic and Logical operations
3) Programs on Code conversions
4) Programs on finding largest/smallest number,
5) Programs on ascending/descending order.
6) Stepper motor Interfacing
7) DC Motor Interfacing
8) ADC Interfacing
9) Traffic Light Controller
10) DAC Interfacing
11) Serial Communication
12) Square wave generation.
13) Keyboard Display Interfacing

MA239 PROBABILITY AND RANDOM PROCESS

Credits: 3:1:0

Unit I:

Unit II:

Unit III:

Unit IV:

Unit V:
Linear operations – Gaussian process – Poisson process – Low-pass and Band-pass process noise representations.

Text Books:

Reference Books:

10MS201 ENGINEERING PROJECT COSTING

Credits: 2:1:0

Objectives:
The basic objective of the course is to give an insight about the importance of costing and to create necessary cost awareness to the students which adds to their knowledge a focused approach /path in the present highly competitive globalised arena. This paper provides the necessary inputs particularly for students pursuing Engineering courses and imbibe knowledge on project cost analysis etc

Learning Outcome:
At the end of the course the students will able to know and apply the cost concepts in real life projects. Project costing knowledge gives the students a practical and foreseeing insight in his area of employment. It enables them to have an awareness on cost consciousness and helps them to take cost effective decisions.

UNIT-1 : INTRODUCTION: Costing –Scope, Objectives ,Advantages ,Limitations, Role of Costing in WTO Objections against costing, steps in installation of cost accounting system in business, Characteristics of an ideal costing system

UNIT-3: APPLICATIONS: Job costing-Objectives, merits, limitations, Application –Process costing- application, abnormal loss, abnormal gain- - Simple break even analysis- Inventory control in projects-

UNIT-4: PROJECT COST MANAGEMENT: Key project parties-Managing risk in private infrastructure project-Project related activities-PPP (Public private partnership in infrastructure projects-outline Facet of project analysis –Key issues in major investment decisions –statement of analysis of cost variation

UNIT-5: PROJECT INVESTMENT BUDGETING:- Objectives, common weakness-techniques(NPV, Payback, ARR, Profitability index)-Project disparities and conflict in ranking-Project control and Performance Analysis - Decision making.

Text Books:

Reference Book:

10E1218 MODERN CONTROL SYSTEMS

Credits: 3: 1:0

Course Objectives

- To teach the fundamental concepts of Control systems and mathematical modelling of the system
- To study the concept of time response and frequency response of the system
- To teach the basics of stability analysis of the system

Course Outcome

- Students will have the knowledge of mathematical modelling of the system
- Students will be able to find the response of different order systems for a step input
- Students will be able to identify the stability of the system

Unit 1: Introduction
Open loop and closed loop systems - transnational and rotational mechanical systems and analogous electrical systems - Basic components of control systems - potentiometer - synchros - tachogenerator - a.c and d.c servo motor – Mathematical representation – block diagram – signal flow graph and transfer function of electrical systems
Unit II: Time Response
Time response - step response of first order and second order systems - time domain specifications - type and order of a system - steady state error - static error and generalized error coefficients

Unit III: Frequency Response
Frequency domain specifications - estimation of the specifications for a second order system. Bode plot - Nichol's chart - Nyquist stability criterion - applications of Bode plots and Nyquist stability criterion – polar plot

Unit IV: Stability Analysis
Stability - characteristic equation - location of roots in s plane for stability - Routh Hurwitz criterion - Root Locus Techniques

Unit V: State Space Analysis of Control Systems
State space representation – The concept of state – State space representation of systems – Solution of state equations – Eigen values and Eigen vectors of n x n nonsingular matrix – Diagonalization of n x n matrix - Transfer matrix – Controllability – Observability

Text Books:

Reference Book:

09EC224 DIGITAL SIGNAL PROCESSING

Credits: 3:1:0

Objective
To know more about digital signal processing concepts

INFERENCEn Students can make use of signal processing concepts in TMS processors

UNIT I
Introduction to DSP and Fourier Transform
UNIT II
Finite Impulse Response Digital Filters

UNIT III
Infinite Impulse Response Digital Filters
Realization structures of IIR filters-Direct,cascade,parallel forms

UNIT IV
FiniteWord Length Effects

UNIT V
Special Topics in DSP And DSP Processors

Text Book

Reference Books

10EC205 VLSI DESIGN

Credits: 3:0:0

Objective
The purpose of this course is to give an exposure to VLSI Design Process, Layout Design, CMOS Logic Design styles and VHDL
Outcome
- Knowledge in VHDL Programming
- To Design various CMOS Design Styles

UNIT I
Overview of VLSI Design Methodology

UNIT II Layout Design

UNIT III CMOS Design Styles
Sheet Resistance-Area Capacitances of layers-Standard Unit of Capacitance-Area Capacitance Calculations-CMOS Logic Design styles

UNIT IV Introduction to VHDL

UNIT V Data Flow, Behavioral and Structural Modeling

Text Books

Reference Books

10EC208 VLSI DESIGN LAB
Credits: 0:0:2

VHDL PROGRAMS
1. Design and Simulation Half adder and Full adder
2. Design & Simulation simple ALU
3. Design & Simulation of
   4x1 Multiplexer & Demultiplexer
4. Design & Simulation of Combinational Circuits
   • Magnitude Comparator
   • 3x8 Encoder
5. Design and Simulation of up-down counter
   • JK Flip-flop
   • RS Flip-flop
   • T Flip-flop
   • D Flip-flop
7. Design and Simulation of Memory Module

SIMULATION PROGRAMS

8. Design & Simulation of CMOS Inverter/NAND & NOR.
9. Design & Simulation Half adder & Full adder
10. Design & Simulation of Transmission Gate and Multiplexer using TG
11. Design & Simulation of Boolean Expression & Bi CMOS Logic
12. Design & Simulation of different CMOS Design styles.

Required Software Tools:
   Xilinx 9.1, Model Sim, Tanner EDA

09EC227 DIGITAL SIGNAL PROCESSING LAB

Credits: 0:0:2
1. Waveform generation
2. Basic operations on dt-signals
3. Properties of discrete time system
4. Sampling rate conversion
5. Discrete convolution
6. Discrete fourier transform
7. Fast fourier transform
8. Analog butterworth filters
9. Analog chebyshev filters
10. Design of IIR filter
11. Design of FIR filter
   a. Time domain response of IIR &FIR system
   Frequency response of dt- systems

EC282 ANTENNAS AND WAVE PROPAGATION

Credits 3:1:0

UNIT I: Radiation Fields of Wire Antennas
Concept of vector potential-modification of time varying retarded case. Fields associated with Hertzian dipole-Radiation power, resistance and gain of current element- Radiation resistance of elementary dipole with linear current distribution- Radiation from half-wave dipole and quarter wave monopole-Assumed current distribution for wire antennas-Use of capacity hat and loading coil for short antennas

UNIT II:  Antenna Fundamentals and Antenna Arrays
Definitions: Radiation intensity-Directive gain-Directivity-Power gain-Beam width-Band width. Radiation resistance and gain of half wave dipole and folded dipole-Reciprocity principle-Effective length and effective area. Relation between gain effective length and radiation resistance
Loop Antennas: Radiation from small loop and its radiation resistance- Radiation from loop with circumference equal to wavelength and resultant circular polarization on axis
Helical Antennas: Normal and axial mode of operation
Antenna Arrays: Expression for electric field from two or three element arrays-uniform linear array-method of pattern multiplication-binomial array-image method

UNIT III: Travelling Wave Antennas
Radiation from a traveling wave on a wire
Rhombic Antenna: Analysis and design
Coupled Antennas: Self and mutual impedance-2 and 3 element yagi antennas-Log periodic antennas-feeding and transposing of lines- effects of decreasing $a$.

UNIT IV: Aperture and Lens Antennas
Radiation from Huygen’s source- Radiation from the open end of a coaxial line- Radiation from a rectangular aperture treated as an array of Huygen’s source- Equivalence of fields of slot and complementary dipole- Relation between dipole and slot impedances.
Feeding of slot antennas-Thin slot in an infinite cylinder-Field on E plane horn- Radiation from circular aperture-Beam width and effective area
Reflector antennas-Lens antennas-Spherical waves and biconical antennas

UNIT V: Propagation
Sky wave propagation: Structure of ionosphere-Effective dielectric constant of ionized region-Refraction-Refractive index-critical frequency-Skip distance-Effect of earth’s magnetic field-collisions-Max usable frequency-fading-diversity reception
Space wave propagation: Reflection of polarized waves-Reflection characteristics of earth-Resultant of direct and reflected wave at the receiver-Duct propagation
Ground wave propagation: Attenuation characteristics-calculation of field strength
Text Book:

Reference:

10EC204 DIGITAL COMMUNICATION

Credits: 4:0:0

Objectives
• To equip the students with the basic concepts of digital modulation techniques.
• To understand the need and basics of error control coding.
• To understand the effect of noise in data reception.

OUTCOME:
• To make the students understand the recent technologies with the basics of digital communication and design receivers.

UNIT I
Sampling And Bandlimited Signalling
Review of Sampling Theorem, PAM and TDMA Principles, Quantization, PCM, DPCM and Delta Modulation – International standard (CCIT, CEPT) Power Spectra of PAM signals - Inter symbol Interference - Ideal Nyquist channel - Raised cosine channels – Correlative coding and precoding.

UNIT II
Digital Modulation

UNIT III
Data Transmission – Detection and Estimation

UNIT IV
Information Theory and Coding
Discrete messages-amount of information-average information-entropy information rate-Shannon’s theorem-capacity of gaussian channel-bandwidth-S/N trade off-coding-parity check
bit coding-block codes coding and decoding probability of error with coding - Convolution codes – Cyclic codes.

UNIT V
Spread Spectrum Systems
Psuedo Noise sequences, generation and correlation properties - direct sequence spread spectrum systems - Frequency Hop systems - processing gain - antijam and multipath performance.

Text Books

Reference Books

09EC223 MICROWAVE AND OPTICAL COMMUNICATION ENGINEERING

Credits 4: 0: 0

Objective
To get knowledge about Microwave Devices

Outcome
Student knows more about Microwave and its propagation

UNIT I
Microwave Passive Devices
UNIT II
Microwave Vacuum Tube Devices

UNIT III
Microwave Solid State Devices and Measurement

UNIT IV
Optical Communication

UNIT V
Optical Transmitters and Receivers

Text Books

Reference Books
EE269 COMPUTER COMMUNICATION

Credits: 3:0:0

Unit I: Introduction

Unit II: Local Area Networks

Unit III: Data Communication Techniques
Asynchronous and synchronous communication – BISYNC, SDLC, HDLC – X.2.5 protocols – Error control coding.

Unit IV: Inter – Networking

Unit V: Broadband Networks

Text Books

Reference Books

09EC237 MICROWAVE AND OPTICAL COMMUNICATION LAB

Credits: 0:0:2

Any 10 experiments

1. Frequency And Wavelength Measurement
2. Impedance measurement
3. Mode characteristic of reflex klystron
4. Magic tee
5. Directional coupler
6. Characteristics of Gunn diode
7. Setting up of analog link
8. Setting up of digital link
9. Measurement of Numerical aperture of optical fiber
10. Study of losses in optical fiber
11. Characteristics of LED and PD
12. Time division multiplexing using optical link.

09EC228 ADVANCED COMMUNICATION LAB

Credits: 0:0:2
1. Modulation and Demodulation of PAM, PWM, PPM
2. Digital Modulation techniques
3. Pulse code modulation and demodulation
4. Delta modulation and demodulation
5. RF filters
6. RF tuned amplifier
7. Measurement of antenna resonance and VSWR
8. Inverse square law of propagation and verification of reciprocity theorem
9. Determination of characteristics impedance & dielectric constant of transmission line
10. Measurement of VSWR, Reflection coefficient & return loss of transmission line
11. Study of serial communication
12. Modulation using MATLAB
13. Study of GPS