V SEMESTER
(A30411) ANTENNAS & WAVE PROPAGATION

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit-I: Antenna basics

Introduction, basic antenna parameters- patterns, beam area, radiation intensity, beam efficiency, directivity – gain- resolution, antenna apertures, effective height, illustrative problems. Fields from oscillating dipole, field zones, front-to-back ratio, antenna theorems, Retardedpotentials-Helmholtz theorem.

Thin linear wire antennas-Radiation from small electric dipole, quarter wave monopole and half wave dipole-current distributions, field components, radiated power, radiation resistance, beam width, directivity, effective area and effective height, natural current distributions, far fields and patterns of thin linear centre feed antennas of different lengths, illustrative problems. Loop antennas - introduction, small loop, comparison of far fields of small loop and short dipole, radiation resistances and directivities of small and large loops (qualitative treatment).

Unit-II: VHF, UHF and Microwave Antennas-I

Arrays with parasitic elements- Yagi-Uda array, folded dipoles and their characteristics, helical antennas-helical geometry, helix modes, practical design considerations for monofilar helical antenna in axial and normal modes, horn antennas - types, fermat's principle, optimum horns, design considerations of pyramidal horns, illustrative problems.

Unit-III: VHF, UHF and Microwave Antennas-II

Micro strip antennas- introduction, features, advantages and limitations, rectangular patch antennas-geometry and parameters, characteristics of micro strip antennas. Impact of different parameters on characteristics,

Reflector antennas-Introduction, flat sheet and corner reflectors, paraboloidal reflectors-geometry, pattern characteristics, feed methods. Illustrative problems.

Lens antennas- Introduction, geometry of non-metallic dielectric lenses, zoning, tolerances and applications.

Unit-IV: Antenna Arrays

Point sources-definition, patterns, arrays of 2 isotropic sources-different cases, principle of pattern multiplication, uniform linear arrays-Broadside arrays, Endfire arrays, EFA with increased directivity, derivation of their characteristics and comparison, BSA with non-uniform amplitude distributions-general considerations and binomial arrays, illustrative problems.

Antenna measurements: Introduction, concepts – Reciprocity, near and far fields, coordinate system, sources of errors. Patterns to be measured, pattern measurement arrangement, directivity measurement, gain measurements (by comparison, absolute and 3 –antenna methods).

Unit-V: Wave Propagation-I

Introduction, definitions, categorizations and general classifications, different modes of wave propagation. Ground wave propagation (qualitative treatment) for flat earth reflections, space and surface waves, wave tilt, curved earth reflections.

Space wave propagation - Introduction, field strength variation with distance and height, effect of earth's curvature, absorption, super refraction, M-curves and duct propagation, scattering phenomena, tropospheric propagation.

Wave Propagation– II: sky wave propagation- Introduction, structure of ionosphere, refraction and reflection of sky waves by ionosphere, Ray path, critical frequency, MUF, LUF, virtual height and skip distance. Relation between MUF and skip distance, multi-hoppropagation.

Text books:

1. Antennas and Wave Propagation – J. D. Kraus, R. J. Marhefka And Ahmad S.Khan, TMH, New Delhi, 4th Ed., (Special Indian Edition), 2010.
2. Electromagnetic Waves and Radiating Systems – E.C. Jordan And K.G. Balmain, Phi, 2nd Ed., 2000.

Reference books:

1. Antenna Theory-C.ABalanis, John Wiley &Sons, 3rd Ed., 2005.
2. Antennas and Wave Propagation-K.D.Prasad, Satyaprakashan, Tech India Publications, New Delhi, 2001.

3. Transmission and Propagation-E.V.D.Glazierand.R.L.Lamont, The Services Text Book Of Radio, Vol.5, Standard Publishers Distributors, Delhi.
4. Electronic and Radio Engineering-F.E.Terman, Mcgraw-Hill, 4th Edition, 1955.
5. Antennas-John D.Kraus, Mcgraw-Hill (International Edition), 2nd Ed.1988.

Course Outcomes

At the end of the course the student will be able to:

1. Explain the basic concept of radiation mechanism of antenna, define basic antenna Parameters and derive relation between them.
2. Explain constructional details, working principle and characteristics of different linear antennas, VHF, UHF and Microwave Antennas.
3. Analyze the antenna array concepts and apply this knowledge to design them.
4. Demonstrate techniques of measuring different antenna parameters and can interpret the results.
5. Explain different modes of propagation, their characteristics and applications.

(A30412) LINEAR & DIGITAL IC APPLICATIONS

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit-I: Operational Amplifier

Introduction to Op-Amps, Ideal and Practical Op-Amp, Op-Amp characteristics, DC and AC characteristics, Features of 741 Op-Amp, Modes of Operation- Inverting, Non-inverting, Differential, Instrumentation Amplifier, AC Amplifier, Differentiators and Integrators, Comparators, Schmitt trigger, Introduction to Voltage Regulators, Features of 723 Regulator, Three Terminal Voltage Regulators.

Unit-II: Op-AmpApplications

Introduction to Active Filters, Characteristics of Band Pass, Band Reject and All Pass Filters, Analysis of 1^{st} Order LPF & HPF Butterworth Filters, Waveform Generators- Triangular, Saw tooth, Square wave.

IC 555 & IC 565 Applications

IC 555 Timer- Functional Diagram, Monostable and Astable Operations, Applications, IC565 PLL- Block Schematic, Description of Individual Blocks, Applications.

Unit-III: Data Converters

Introduction, Basic DAC techniques, Different types of DACs-Weighted resistor DAC, R-2R ladder DAC, Inverted R-2R DAC, Different types of ADCs-Parallel Comparator Type ADC, Counter Type ADC, Successive Approximation ADC and Dual Slope ADC, DAC and ADC Specifications.

Unit-IV: Digital Integrated Circuits

Classification of Integrated Circuits, Comparison of Various Logic Families, CMOS Transmission Gate, IC interfacing-TTL driving CMOS & CMOS Driving TTL, Combinational Logic ICs-Specifications and Applications of TTL-74XX & CMOS 40XX Series ICs- Code Converters, Decoders, Demultiplexers, LED & LCD Decoders with Drivers, Encoders, Priority Encoders, Multiplexers, Demultiplexers, Priority Generators/Checkers, Parallel Binary Adder /Subtractor, Magnitude Comparators.

Unit-V: Sequential Logic ICs and Memories

Familiarity with Commonly Available 74XX & CMOS 40XX Series ICs - All Types of Flip-Flops, Synchronous Counters, Decade counters, Shift Registers.

Memories- ROM Architecture, Types of ROMs & Applications, RAM Architecture, Static & Dynamic RAMs.

Text Books:

1. Op-Amps & Linear ICs - Ramakanth A. Gayakwad, PHI, 2003.
2. Linear Integrated Circuits -D. Roy Chowdhury, New Age International (p)Ltd, 2nd Ed., 2003.
3. Digital Fundamentals - Floyd and Jain, Pearson Education, 8th Edition, 2005.

Reference Books:

1. Op-Amps and Linear Integrated Circuits - Concepts and Applications - James M.Fiore, Cengage Learning/Jaico, 2009.
2. Operational Amplifiers and Liner Integrated Circuits by K.Lal Kishore -Pearson, 2009
3. Linear Integrated Circuits and Applications – Salivahana, TMH.
4. Modern Digital Electronics - RP Jain - 4/e - TMH, 2010.
5. Digital Design Principles and Practices – John F. Wakerly 3/e, 2005.
6. Operational Amplifiers with Liner Integrated Circuits, 4/e William D. Stanley, Pearson Education India, 2009.

Course Outcomes

At the end of the course the student will be able to:

1. Describe the characteristics and operating modes of OP-AMP.
2. Design and Analyze filters, oscillators, Wave form generators and voltage regulators using OP-AMP and 555 Timers.
3. Design & Analyze ADC and DAC Converters.
4. Design & Analyze various logic gates by using different logic families like TTL-74xx series and CMOS-40XX series.
5. Design and analyze various logic ICs and Memories.

(A30413) DIGITAL SIGNAL PROCESSING

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit- I: Introduction to Digital Signal Processing

Discrete time signals & sequences, linear shift invariant systems, stability and causality, linear constant coefficient difference equations, Frequency domain representation of discrete time signals and systems.

Realization of Digital Filters: Applications of Z-transforms, solution of difference equations of digital filters, System function, Stability criterion, Frequency response of stable systems, Realization of digital filters – Direct, Canonic, Cascade and Parallel forms.

Unit –II: Discrete Fourier series

DFS representation of periodic Sequences, Properties of Discrete Fourier Series, Discrete Fourier Transforms: Properties of DFT, linear convolution of sequences using DFT, Computation of DFT: Over – lap Add method, over – lap Save method, Relation between DTFT, DFS, DFT and Z-Transform.

Fast Fourier Transforms: Fast Fourier Transforms (FFT) - Radix-2 decimation-in-time and decimation – in-frequency FFT Algorithms, Inverse FFT, and FFT with general Radix-N.

Unit- III: IIR Digital Filters

Analog filer approximations- Butterworth and Chebyshev, Design of IIR Digital filters from analog filters, Step and Impulse invariant techniques, bilinear transformation method, spectral transformations.

Unit- IV: FIR Digital Filters

Characteristics of FIR Digital Filters, Frequency response, Design of FIR Filters: Fourier Method, Digital Filters using Window techniques, Frequency Sampling technique, Comparison of IIR & FIR filters.

Unit- V: Multirate Digital Signal Processing

Introduction, down sampling, Decimation, up sampling, interpolation, sampling rate conversion.

Finite word Length effects: Limit Cycles, Overflow oscillations, round-off noise in IIR digital filters, Computational output round off

Noise, Methods to prevent overflow, Tradeoff between Round off and overflow noise, Dead band effects.

Text Books:

1. Digital Signal Processing, Principles, Algorithms, and Applications, John G.Proakis, DimitrisG.Manolakis, Pearson Education /PHI, 2007.
2. Discrete Time Signal Processing - A.V. Oppenheim and R.W.Schaffer, PHI, 2009.
3. Fundamental ofDigital Signal Processing- LoneyLudeman, John Wiley, 2009.

References:

1. Digital Signal Processing – Fundamentals and Applications – Li Tan, Elsevier, 2008.
2. Fundamentals of Digital Signal Processing Using MATLAB – Robert J.Schilling, Sandra L.Harris, Thomson, 2007.
3. Digital Signal Processing - S.Salivahanan, A.Vallavaraj and C.Gnanapriya, TMH, 2009.
4. Discrete Systems and Digital Signal Processing with MATLAB – TaanS.EIAli, CRC press, 2009.
5. Digital Signal Processing – A practical approach, Emmanuel C.I `feachor and Barrie W.Jervis, 2nd Edition Pearson Education, 2009.
6. Digital Signal Processing - Nagoorkani, TMG, 2012.

Course Outcomes

At the end of the course the student will be able to:

1. Differentiate Time, Frequency and Z- transform analysis on signals and systems.
2. Analyze the fast computation of DFT and appreciate the FFT processing.
3. Explain the significance of various filter structures and effects of round off errors.
4. Design a digital filter for a given specification.
5. Compare the tradeoffs between normal and multi rate DSP techniques and finite length word effects.

(A30414) ELECTRONIC MEASUREMENTS & INSTRUMENTATION

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit- I: Block Schematic of Measuring Systems

Performance characteristics, Static characteristics, Accuracy, Resolution, Precision, Types of Errors, Gaussian Error, Root Sum Squares formula, Dynamic Characteristics, Repeatability, Reproducibility, Fidelity, Lag; Measuring Instruments: DC Volt meters, D'Arsonval Movement, DC Current Meters, AC voltmeters and Current Meters, Ohmmeters, Multi meters, Meter Protection, Extension of Range, True RMS Responding Voltmeters, Specifications of Instruments.

Unit –II: Signal Analysers

AF, HF Wave Analysers, Harmonic Distortion, Heterodyne Wave Analysers, Spectrum Analysers, Power Analysers, Capacitance-Voltage Meters, Oscillators, signal generator.

AF and RF signal generators, Sweep frequency Generators, pulse and Square wave Generators, Function Generators, Arbitrary waveform Generator, Video signal Generators, Specifications

Unit- III: Oscilloscopes

CRT, Block schematic of CRO, Defelection sensitivity, Time Base circuits, vertical Amplifier, Horizontal amplifier, Lissajous Figures, CRO Probes, High Frequency CRO Considerations, Delay Lines, Applications: Measurement of time, Period and Frequency specifications.

Special Purpose oscilloscopes: Dual trace, Dual Beam CROs, sampling oscilloscopes, storage oscilloscopes, digital storage CROs.

Unit- IV: Transducers

Classification, Strain gauges, Bounded, Un bounded; force and displacement transducers, Resistance Thermometers, hot wire anemometers, LVDT, Thermocouples, Synchros, Special Resistance Thermometers, Digital temperature sensing system. Piezo Electric transducers, Variable capacitance transducers, Magneto Strictive Transducer.

Unit- V: Bridges

Wheat stone bridge, Kelvin Double Bridge and Maxwell's Bridge, Schering Bridge

Measurement of Physical Parameters: Flow Measurement, displacement meters, Liquid level Measurements, Measurement of Humidity and Moisture, Velocity, Force, Pressure – High Pressure, Vacuum level, Temperature – Measurements, Data Acquisition Systems.

Text Books:

1. Electronic instrumentation, second edition - H.S.Kalsi, Tata McGraw Hill, 2004.
2. Modern Electronic Instrumentation and Measurement Techniques – A.D. Helfrick and W.D. Cooper, PHI, 5th Edition, 2003

References:

1. Electronic Instrumentation & Measurements - David A. Bell, Oxford Univ. Press, 1997.
2. Electronic Measurements And Instrumentation: B.M.Oliver, J.M.cage TMH reprint 2009.
3. Measurement Systems - Emest O. Doebelin and Dhanesh N Manik, 6th Ed., TMH.
4. Electronic Measurements & Instrumentations by K. Lal Kishore, Pearson Education – 2010.
5. Industrial Instrumentation: T.R.Padmanabham Springer 2009.

Course Outcomes

At the end of the course the student will be able to:

1. Explain the working principles of different electronic meters & Generators and explain the performance characteristics of measuring instruments.
2. Describe the concepts of different wave analyzers and their design.
3. Explain the constructional features, operations and applications of general and special purpose CROs.
4. Describe the working principle and Applications of different types of Sensors and Transducers.
5. Analyze different types of AC & DC Bridges and their applications.

(A30441) DIGITAL DESIGN THROUGH VERILOG HDL
(Professional Elective I)
B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit I: Introduction to Verilog HDL
Verilog As HDL, Levels Of Design Description, Concurrency, Simulation and Synthesis, Function Verification, System Tasks, Programming Language Interface, Module, Simulation and Synthesis Tools.

Language Constructs and Conventions: Introduction, Keywords, Identifiers, White Space Characters, Comments, Numbers, Strings, Logic Values, Strengths, Data Types, Scalars and Vectors, Parameters, Operators.

Unit II: Gate Level Modelling
Introduction, AND Gate Primitive, Module Structure, Other Gate Primitives, Illustrative Examples, Tristate Gates, Array of Instances of Primitives, Design of Flip-Flops with Gate Primitives, Delays, Strengths and Construction Resolution, Net Types, Design of Basic Circuit.

Modelling at Dataflow Level: Introduction, Continuous Assignment Structure, Delays and Continuous Assignments, Assignment to Vectors, Operators.

Unit III: Behavioural Modelling
Introduction, Operation and Assignments, Functional Bifurcation. 'Initial' Construct, 'Always' Construct, Assignments With Delays, 'Wait' Construct, Multiple Always Block, Design at Behavioural Level, Blocking And Non-Blocking Assignments, The 'Case' Statement, Simulation Flow, 'If' and 'If-Else 'Constructs. 'Assign-De-Assign' Construct, 'Repeat' Construct, For Loop, 'The Disable' Construct, 'While Loop', For Ever Loop, Parallel Blocks. 'Force-Release' Construct, Event.

Unit IV: Switch Level Modelling

Basic Transistor Switches, CMOS Switches, Bidirectional Gates, Time Delays with Switch Primitives, Instantiation with 'Strengths' and 'Delays'. Strength Contention with Trireg Nets.

System Tasks, Functions and Compiler Directives: Parameters, Path Delays, Module Parameters, System Tasks and Functions, File Based Tasks and Functions, Compiler Directives, Hierarchical Access, User Defined Primitives.

Unit V: Sequential Circuit Description

Sequential Models-Feedback Model, Capacitive Model, Implicit Model, Basic Memory Components, Functional Register, Static Machine Coding, Sequential Synthesis.

Component Test and Verification: Test Bench-Combinational Circuit Testing, Sequential Circuit Testing, Test Bench Techniques, Design Verification, Assertion Verification.

Text Books:

1. Fundamentals of Digital Logic withVeilog Design - Stephen Brown, ZvonkocVranesic, TMH, 2nd Edition, 2010.
2. Verilog Digital System Design –ZainalabdienNavabi, TMH, 2nd Edition.

Reference Books:

1. Design through Verilog HDL -T R. Padmanabhan, B. Bala Tripura Sundari, Wiley, 2009.
2. Advanced Digital Logic Design Using Verilog, State Machine & Synthesis For FPGA- Sunggu Lee, Cengage Learning, 2012.
3. Verilog HDL-Samir Palnitkar,2nd Edition, Pearson Education, 2009.
4. Advanced Digital Design with The Verilog HDL- Michel D.Ciletti, PHI, 2009.

Course Outcomes

At the end of the course the student will be able to:

1. Understand basic concepts of Verilog Hardware Description Language (HDL).
2. Describe the Behavioral models of various digital circuits.
3. Explain the Register Transfer Level (RTL) models of digital circuits.
4. Describe the standard cell libraries and FPGAs.
5. Synthesize and implement RTL models to standard cell libraries and FPGAs.

(A30442) TELECOMMUNICATIONS SWITCHING SYSTEMS & NETWORKS
(Professional Elective I)

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit- I

Switching System: Evolution of Telecommunications; Basics of a Switching Systems; Functions of a Switching Systems; Crossbar Switching- Principle of Crossbar Switching; Crossbar Switching Configurations; Cross- Point Technology; Crossbar Exchange Organization; General Trunking; Electronic Switching; Digital Switching Systems.

Telecommunications Traffic: Introduction; The UNIT Of Traffic; Congestion; Traffic Measurement; A Mathematical Model; Lost-Call Systems- Theory; Traffic Performance; Loss Systems in Tandem; Use of Traffic Tables; Queuing Systems- The Second Erlang Distribution; Probability of Delay; Finite Queue Capacity; Some Other Useful Results; Systems With A Single Server; Queue in Tandem; Delay Tables; Applications of Delay Formulae.

Unit- II

Switching Networks: Single Stage Networks; Gradings- Principle; Two Stage Networks; Three Stage Networks; Four Stage Networks.

Time Division Switching: Basic Time Division Space Switching; Basic Time Division Time Switching; Time Multiplexed Space Switching; Time Multiplexed Time Switching; Combination Switching; Three Stage Combination Switching.

Control of Switching Systems: Call Processing Functions- Sequence of Operations; Signal Exchanges; State Transition Diagrams; Common Control; Reliability; Availability And Security; Stored Program Control.

Unit - III

Signalling: Introduction; Customer Line Signalling; Audio Frequency Junctions and Trunk Circuits; FDM Carrier Systems- Out band Signalling; In band (VF) Signalling; PCM Signalling;

Inter Register Signalling; Common Channel Signalling Principles-General Signalling Networks; CCITT Signalling Systems Number 6; CCITT Signalling System Number 7; The High Level Data Link Control Protocol; Signal UNITs; The Signalling Information Field.

Unit- IV

Packet Switching: Introduction; Statistical Multiplexing; Local Area and Wide Area Networks-Bus Networks; Ring Networks; Compression of Bus and Ring Networks; Optical Fiber Networks; Large Scale Networks- General; Datagrams and Virtual Circuits; Routing; Flow Control; Standards; Frame Relay; Broadband Networks-General; The Asynchronous Transfer Mode; ATM Switches.

Unit- V

Networks: Introduction; Analog Networks; Integrated Digital Networks; Integrated Services Digital Networks; Cellular Radio Networks; Intelligent Networks; Private Networks; Charging; Routing-General, Automatic Alternative Routing.

Text Books:

1. Telecommunications Switching and Traffic Networks, J E Flood, Pearson Education, 2006.
2. Telecommunications Switching systems and Networks, TyagarajanViswanathan, PHI Pvt. Ltd., 2006.

Reference Books:

1. John C Bellamy, - Digital Telephony, John – Wiley International student Edition, 3rd Edition, 2000.
2. Behrouz A. Forouzan - Data Communications and Networking, TMH, 2nd Edition, 2002.
3. Tomasi - Introduction to Data Communications and Networking, Pearson Education, 1st Edition,2007.

Course Outcomes

At the end of the course the student will be able to:

1. Explain the concepts of telecommunication switching system.
2. Analyze and evaluate fundamental telecommunication trafficmodels.
3. Analyze the basic modem signaling system.
4. Explain the concept of packet switching.
5. Differentiate analog and digital networking systems.

(A30457) COMPUTER ORGANIZATION
(Professional Elective I)

B. Tech. (ECE) V-Semester

L	T	P	C
3	0	0	3

Unit-1

Functional blocks of a computer: CPU, memory, input-output subsystems, control unit. Instruction set architecture of a CPU – registers, instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set. Case study – instruction sets of some common CPUs

Unit-II

Data representation: signed number representation, fixed and floating-point representations, character representation. Computer arithmetic – integer addition and subtraction, ripple carry adder, carry look-ahead adder, etc. multiplication – shift-and-add, Booth multiplier, carry save multiplier, etc. Division restoring and non-restoring techniques, floating point arithmetic.

Unit-III

Introduction to x86 architecture. CPU control unit design: hardwired and micro-programmed design approaches, Peripheral devices and their characteristics: Input-output subsystems, I/O device interface, I/O transfers – program controlled, interrupt driven and DMA, privileged and non-privileged instructions, software interrupts and exceptions. Programs and processes – role of interrupts in process state transitions, I/O device interfaces – SCII, USB

Unit-IV

Pipelining: Basic concepts of pipelining, throughput and speedup, pipeline hazards. Parallel Processors: Introduction to parallel processors, Concurrent access to memory and cache coherency

Unit-V

Memory organization: Memory interleaving, concept of hierarchical memory organization, cache memory, cache size vs. block size, mapping functions, replacement algorithms, write policies.

Text books:

1. "Computer Organization and Design: The Hardware/Software Interface", 5th Edition by David A. Patterson and John L. Hennessy, Elsevier.
2. "Computer Organization and Embedded Systems", 6th Edition by CarlHamacher, McGraw Hill Higher Education.

Reference books:

1. "Computer Architecture and Organization", 3rd Edition by John P. Hayes, WCB/McGraw- Hill
2. "Computer Organization and Architecture: Designing for Performance", 10th Edition by William Stallings, Pearson Education.
3. "Computer System Design and Architecture", 2nd Edition by Vincent P. Heuring and Harry F. Jordan, Pearson Education.

Course Outcomes

On completion of the course students will be able to

1. Describe basic computer organization
2. Explain the design of Control Unit.
3. Illustrate Data representation in computer's memory
4. Describe Input-Output, Memory Organization.
5. Distinguish between RISC and CISC Instruction Set.

(A30017) INDIAN CONSTITUTION

B. Tech. (ECE) V-Semester

L	T	P	C
2	0	0	0

UNIT-I

Introduction to Indian Constitution: Constitution' meaning of the term, Indian Constitution- Sources and constitutional history, Features- Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy

UNIT-II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre- State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, LokSabha, RajyaSabha, The Supreme Court and High Court: Powers and Functions; **State Government and its Administration** Governor: Role and Position, CM and Council of ministers, State Secretariat: Organization, Structure and Functions

UNIT-III

A: Local Administration District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation,

B: Pachayati raj: Introduction, PRI: ZilaPachayat, Elected officials and their roles, CEO ZilaPachayat: Position and role, Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy

UNIT-IV

Concept and Development of Human Rights: Meaning Scope and Development of Human Rights, United Nations and Human Rights – UNHCR, UDHR 1948, ICCPR 1996 and ICESCR 1966, Human Rights in India: Protection of Human Rights Act,1993 (NHRC and SHRC), First, Second and Third Generation Human Rights, Judicial Activism and HumanRights.

UNIT-V

Election Commission: Election Commission- Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women

Reference Books:

1. Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd. NewDelhi
2. SubashKashyap, Indian Constitution, National BookTrust
3. J.A. Siwach, Dynamics of Indian Government &Politics
4. D.C. Gupta, Indian Government andPolitics
5. H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)
6. J.C. Johari, Indian Government and PoliticsHans

E-Resources:

1. nptel.ac.in/courses/109104074/8
2. nptel.ac.in/courses/109104045/
3. nptel.ac.in/courses/101104065/
4. www.hss.iitb.ac.in/en/lecture-details
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

Course Outcomes:

At the end of the course, the student will be able to:

1. Identify the sources and understand the features and principles of Indian Constitution.
2. Learn about Union Government, State government and its administration.
3. Get acquainted with Local administration and Pachayati Raj.
4. Educate us about basic concepts and developments of HumanRights.
5. Gain knowledge on roles and functioning of Election Commission.

(A30018) ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

B. Tech. (ECE) V-Semester

L	T	P	C
2	0	0	0

UNIT I:

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, the physical and social contexts in which traditional knowledge develop, the historical impact of social change on traditional knowledge systems. Indigenous Knowledge (IK), characteristics, traditional knowledge vis-à-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge vis-à-vis formal knowledge

UNIT II:

Protection of traditional knowledge: the need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.

UNIT III: Legal frame workand TK:

A: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmer's Rights Act, 2001 (PPVFR Act);

B: The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016. Geographical indicators act 2003.

UNIT IV:

Traditional knowledge and intellectual property: Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, global legal FORA for increasing protection of Indian Traditional Knowledge.

UNIT V:

Traditional knowledge in different sectors: Traditional knowledge and engineering, Traditional medicine system, TK and biotechnology, TK in agriculture, Traditional societies depend on it for their food and healthcare needs, Importance of conservation and

sustainable development of environment, Management of biodiversity, Food security of the country and protection of TK.

Reference Books:

1. Traditional Knowledge System in India, by AmitJha,2009.
2. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, PratibhaPrakashan2012.
3. Traditional Knowledge System in India byAmitJha Atlantic publishers,2002

E-Resources:

1. https://www.youtube.com/watch?v=LZP1StpYEPM
2. http://nptel.ac.in/courses/121106003/

Course outcomes:

At the end of the course the students will be able to

1. Understand the concept of Traditional knowledge and its importance.
2. Know the need and importance of protecting traditionalknowledge.
3. Know the various enactments related to the protection of traditionalknowledge.
4. Understand the concepts of Intellectual property to protect the traditionalknowledge.
5. Compare and contrast the Indian Traditional knowledge with modern scientific perspectivies.

(A30560) INTRODUCTION TOARTIFICIAL INTELLIGENCE (Common to ECE, EEE, CIVIL, MECH)

B. Tech. (ECE) V-Semester

L	T	P	C
2	0	0	0

Unit-I

Introduction: AI problems, Agents and Environments, Structure of Agents, Problem Solving Agents Basic Search Strategies: Problem Spaces, Uninformed Search (Breadth-First, Depth-First Search, Depth-first with Iterative Deepening), Heuristic Search (Hill Climbing, Generic Best-First, A*)

Unit-II

Advanced Search: Constructing Search Trees, Stochastic Search, A* Search Implementation, Minimax Search, Alpha-Beta Pruning.

Basic Knowledge Representation and Reasoning: Propositional Logic, First-Order Logic, Forward Chaining and Backward Chaining.

Unit-III

Advanced Knowledge Representation and Reasoning: Knowledge Representation Issues, Nonmonotonic Reasoning, Other Knowledge Representation Schemes.

Unit-IV

Reasoning Under Uncertainty: Basic probability, Acting Under Uncertainty, Bayes' Rule, Representing Knowledge in an Uncertain Domain, Bayesian Networks.

Unit-V

Learning: What Is Learning? Rote Learning, Learning by Taking Advice, Learning in Problem Solving, Learning from Examples, Winston's Learning Program, Decision Trees.

TEXT BOOK:

1. Russell, S. and Norvig, P, Artificial Intelligence: A Modern Approach, Third Edition, Prentice Hall, 2010.

REFERENCE BOOKS:

1. Artificial Intelligence, Elaine Rich, Kevin Knight, Shivasankar B. Nair, The McGraw Hill publications, Third Edition, 2009.
2. George F. Luger, Artificial Intelligence: Structures and Strategies for Complex Problem Solving, Pearson Education, 6th ed., 2009.

Course Outcomes

After undergoing this course, the students will be able to:

1. Differentiate a program & script, and expalin python basics
2. Write applications using python datastructures and functions
3. Explain OOPs in python and Build User defined modules
4. Develop programs using fundamentals of perl
5. Design applications using advanced perl

(A30415) ANALOG &DIGITAL COMMUNICATIONS LAB

B. Tech. (ECE) V-Semester

L	T	P	C
0	0	3	1.5

Note: Minimum of 12 Experiments should be conducted

1. Amplitude Modulation andDemodulation.
2. SSB-SC Modulator and Demodultor (Phase ShiftMethod).
3. Frequency Modulation and Demodulation.
4. Study of spectrum analyzer and analysis of AM, DSB-SC and FMSignals.
5. Sampling Theorem – Verification.
6. Pulse Position Modulation&Demodulation.
7. Frequency Division Multiplexing.
8. Pulse Code Modulation: Generation andDetection.
9. Differential Pulse Code ModulationGeneration andDetection.
10. DeltaModulation: Generation and Detection.
11. Generation and Detection of Amplitude ShiftKeying.
12. Generation and Detection of Frequency ShiftKeying.
13. Generation and Detection of Differential Phase ShiftKeying.
14. Generation and Detection of Quadrature Phase ShiftKeying.

Equipment required

1. CRO - 0-20 M Hz
2. FunctionGenerators - 0-1M Hz
3. Multimeters
4. Lab Experimental Kits
5. Spectrum Analyzer - (0 -1GHz)

Course Outcomes

At the end of the course the student will be able to:

1. Verify the concepts of various analog modulation and demodulation methods in practice.
2. Demonstrate the study of spectrumanalyzer.
3. Conduct experiments on various Digital modulationtechniques
4. Convert the Analog signal to digital data using PCM, DPCM & DM.
5. Verify the concepts of various digital modulation and demodulation methods in practice.

(A30416) DIGITAL SIGNAL PROCESSING LAB

B. Tech. (ECE) V-Semester

L	T	P	C
0	0	3	1.5

Note:

- Minimum of 12 experiments are to be conducted.
- The programs shall be implanted in software (using MATLAB / LAB VIEW / C programming /OCTAVE or Equivalent) and hardware (Using TI / Analog devices / Motorola / Equipment DSP processors).

List of Experiments

1. Generation of Sinusoidal waveform / signal based on recursive difference equations.
2. To find DFT/IDFT of given DT signal
3. To find frequency response of a given system given in (Transfer Function / Differential equation form).
4. Implementation of FFT of given sequence
5. Determination of Power Spectrum of a given signal(s).
6. Implementation of LP FIR filters for a given sequence.
7. Implementation of HP FIR filters for a given sequence.
8. Implementation of LP IIR filters for a given sequence.
9. Implementation of HP IIR filters for a given sequence.
10. Generation of Sinusoidal signal through filtering
11. Implementation of Decimation Process.
12. Implementation of Interpolation Process.
13. Implementation of I/D sampling rate converters.
14. Impulse response of first order systems.
15. Impulse response of second order systems.

Course Outcomes:

At the end of the course the student will be able to:

1. 1Examine Time, Frequency and Z- transform analysis on signals and systems.
2. Apply z-transform, DTFT, DFT and FFT to analyze and design DSP systems.
3. Analyze and Observe Magnitude and phase characteristics (Frequency response Characteristics) of digital filters.
4. Evaluate the impulse response of first order and second order systems
5. Predict the Multi-rate filters for various applications of DSP.

(A30003) ADVANCED ENGLISH COMMUNICATION SKILLS LAB

B. Tech. (ECE) V-Semester

L	T	P	C
0	0	3	1.5

COURSE OBJECTIVES

This Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.

INTRODUCTION

The introduction of the English Language Lab is considered essential at 3rd year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

UNIT-I: Functional English: Starting a conversation, responding appropriately and relevantly, using the right body language, Role play in Different Situations.

UNIT-II: Vocabulary Building: Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, analogy, idioms and phrasal verbs.

UNIT-III: Group Discussion: Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.

UNIT-IV: Interview Skills: Concept and process, pre-interview planning, opening strategies, answering strategies, Interview through

tale and video- conferencing.

UNIT-V: Resume`and Technical Report Writing: Structure and presentation, planning, defining the career objective, projecting ones strengths and skill-sets, summary, formats and styles, Letter-writing. **Reading Comprehension**: Reading for facts, guessing meanings from context, scanning, skimming, inferring meaning and critical reading.

Course Outcomes:

1. Explain the rules of formal and informal situational dialogues and develop verbal & non-verbal communication skills.
2. Build academic vocabulary, use a variety of accurate sentence structures and utilize digital literacy tools to develop writing and grammar skills.
3. Express thoughts with clarity and hold discussions with everyone to develop analytical thinking.
4. Develop the skills required for attending different types of interviews.
5. Illustrate the report writing and summarize the main ideas of report; apply key elements of structure and style in drafting loner documents and read an incrasing range of texts well.