DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

SE : III SEM (CBGS)

Subject: Applied Mathematics III (ETS301)

CO1: Obtain the Laplace Transform and Inverse Laplace transform using standard results and properties. Solve ODE using LT.

CO2: Perform calculation with operators Gradient, Divergence and Curl.

CO3: Find the harmonic conjugate, orthogonal trajectory of an analytic function.

CO4: Expand the periodic function using Fourier series and complex form of Fourier series, understand the concept of half range sine and cosine series.

CO5: Explain Recurrence relation between the sequences of Bessel's function and Evaluate surface/ volume integral using Stokes and Gauss Divergence theorem.

CO6: Evaluate surface/ volume integral using Stokes and Gauss Divergence theorem.

Subject: Analog Electronics I (ETC302)

CO1:Explain different types of diodes and their application.

CO2:Describe operation of different FETs.

CO3:Explain operation of different BJTs.

CO4:Design and analyze various biasing circuits of BJT and FET.

CO5:Analyse BJT and FET amplifier circuits.

CO6:Design different types of oscillator.

Subject: Digital Electronics (ETC303)

CO1: Apply Digital logic to solve real life Problem .

CO2: Analyze design and implement combinational logic circuits.

CO3: Analyze design and implement sequential logic circuits.

CO4: Classify different semiconductor memories.

CO5:Analyze digital system design using PROM, PLA,PAL

CO6:Implement combinational and sequential circuits using vhdl .

Subject: Circuits and Transmission Lines (ETC304)

CO1:Apply network theorems to analyze circuits with dependent sources.

CO2:Analyze the DC circuits in time & frequency domain.

CO3:Analyze ladder and non Ladder circuits using network functions.

CO4:Analyze two port networks using various parameters.

CO5:Synthesize the network using passive elements.

CO6:Analyze transmission line parameters using smith chart.

Subject: Electronic Instruments and Measurements (ETC305)

CO1:Describe the method and characteristics of measuring instruments

CO2:Compare various types of sensors & transducers

CO3:Explain working of various meters and bridges

CO4: Describe various types of data acquisition systems & Its types.

CO5: Explain the measurement of voltage, frequency & phase using CRO & DSO.

CO6: Compare various types of signal analyzers.

SE : IV SEM (CBGS)

Subject: Applied Mathematics IV (ETS401)

CO1:Find Eigen values and eigenvectors of a matrix to diagonalize the Square matrix.

CO2:Analyze the quadratic form of a matrix.

CO3:Evaluate integral using Cauchys theorem, residue theorem.

CO4:Explain the Use Gram Schmidt processes to orthagonalise the vectors.

CO5:Apply method of calculus of variations to find extremal of the functional.
CO6:Maximize or minimize functional by Euler–Lagrange equation.

Subject: Analog Electronics II (ETC402)

CO1:Analyze & compare various types of multistage amplifier

CO2:Analyze BJT AND FET differential amplifier

CO3:Analyze different biasing technique for IC

CO4:Analyze and compare various types of power amplifier

CO5:Design and analyze different application of OPAMP
CO6:Compare different types of regulators

Subject: Microprocessors and Peripherals (ETC403)

CO1:Describe the basic concepts of microcomputer system.

CO2:Describe the architecture ,pin configuration & organization of 8085 & 8086 microprocessor.

CO3:Write Assembly language programs for 8086.

CO4:Explain the interfacing of various peripheral devices, ADC, DAC with 8086.

CO5:Explain features of processors 80186, 80286, 80386, 80486 and Pentium.

CO6:Design 8086 based system for a given specifications.

Subject: Wave Theory and Propagation (ETC404)

CO1: Analyze nature of electric or magnetic field produced due to different charge distributions.

CO2: Explain working of different equipments based on electromagnetic used in day to day life.

CO3: Analyze behavior of EM waves and travelling of waves in free space as well as media.

CO4: Apply numerical methods for designing antennas.

CO5: Determine conditions for loss of signal & select proper parameters for propagation of the waves by considering the factors affecting it.

CO6: Explain the basics of wave propagation so as to identify and solve problems related to the propagation of waves for the study of antennas.

Subject: Signals and Systems (ETC405)

CO1:Classify and analyze various types of signals and systems.

CO2: Analyze continuous and discrete time systems in time domain.

CO3:Explain the basics of Laplace transform and analysis of CT LTI systems using Z Transform.

CO4:Explain the basics of Z transform and analysis of DT LTI systems using Z Transform.

CO5:Analyze continuous and discrete time systems in frequency domain.

Subject: Control Systems (ETC406)

CO1 :Explain basic concepts of control system

CO2 : Derive the mathematical model of different types of system using block diagram reduction and signal flow graph techniques.

CO3 : Derive the mathematical model of different types of system using state variable technique.

CO4 : Analyze stability of control system in time domain.

CO5 : Analyze stability of control system in frequency domain.

CO6 : Explain optimal and adaptive control system

Subject: Microcontrollers and Applications (ETC501)

CO1: Explain the internal architecture of 8051 microcontroller.

CO2: Write assembly language programs using instruction set of 8051 microcontroller.

CO3: Apply the knowledge of interfacing peripheral devices to the microcontroller to design microcontroller based system.

CO4: Explain the internal architecture of ARM7.

CO5: Describe instruction sets for ARM7.

CO6: Describe an embedded system.

Subject: Analog Communication (ETC502)

CO1: Explain the basics of communication system and noise.

CO2: Describe amplitude modulation and demodulation and its applications.

Co3: Compare AM,FM and PM and applications of angle modulation.

CO4: Compare different types of radio receivers.

CO5: Prove sampling theorem and compare PAM, PWM and PPM.

CO6: Explain TDM, FDM and its applications.

Subject: Random Signal Analysis (ETC503)

CO1: Solve problems on probability theory and random variables.

CO2: Solve problems on PMF, PDF, CDF, MGF and CF.

CO3: Solve problems on joint, conditional and marginal distributions.

CO4: Prove central limit theorem and its applications.

CO5: Classify different random processes and its applications.

CO6: Explain the basics of Markov chain, queuing theory and its application.

Subject: RF Modeling and Antennas (ETC504)

CO1: Explain behavior of high frequency passive and active components and their design

CO2. Analyze and design RF filters.

CO3. Analyze the radiation mechanism of antennas in communication systems.

CO4. Distinguish between antennas on the basis of their electrical performance.

CO5.Evaluate and use of appropriate design antennas for given specifications

CO6. Explain and summarize the impact of RF and microwave engineering solutions in a global and social context

Subject: Integrated Circuits (ETC505)

CO1:Explain basic configurations of operational amplifier with and without feedback.

CO2:Design and analyze linear applications of op-amp namely amplifiers, converters, filters & oscillators.

CO3:Explain and analyze non linear applications of op-amp.

CO4:Explain working principle of the special purpose integrated circuits and its applications.

CO5:Describe and design different types of voltage regulators.

CO6: Describe special purpose ICs used as counter, shift register & ALU.

Subject: Business Communication and Ethics (ETS506)

CO1:Write technical report in specific format.

CO2:Write technical proposal in specific format.

CO3:Implement interpersonal skills effectively and enhance communication .

CO4:Prepare the Notice , Agenda and Minutes of a formal meeting.

CO5:Apply ethical practices for their career advancement.

CO6:Practice & Apply employability skills to prepare resume and face the interview.

TE : VI SEM (CBGS)

Subject: Digital Communication (ETC601)

CO1. Apply the concepts of information theory in source coding.

CO2. Evaluate various methods to eliminate Inter Symbol Interference.

CO3. Compare different receiver techniques in terms of error probability.

CO4. Compare the performances of different band pass modulations and applications.

CO5. Evaluate the performances of different error control codes and applications.

CO6. Explain the basics of different spread spectrum techniques.

Subject: Discrete Time Signal Processing (ETC602)

CO1:Analyze digital systems using frequency response plot.

CO2:Analyze digital systems using DFT and FFT algorithms.

CO3:Design and realize digital filters.

CO4:Explain the concept of multi rate digital signal processing and solve problems based on it.

CO5:Analyze the effect of hardware limitations on performance of digital filters.

CO6:Explain the applications of digital signal processing in electronics and communication fields.

Subject: Computer Communication and Telecom Networks (ETC603)

CO1: Compare network models based on the hardware components, functions, protocols, services, data formats, addressing and way of communication at each layer.

CO2: Differentiate various transmission media and multiplexing schemes with their applications.

CO3: Apply the knowledge of link layer devices, addressing, multiple access schemes and protocols in lan designing.

CO4: Apply the concept of layer3 addressing and routing in practical network implementation.

CO5: Compare between transport layer functions.

CO6: Demonstrate the use of application layer protocols.

Subject: Television Engineering (ETC604)

CO1: Describe the basics of picture transmission and reception.

CO2: Compare globally accepted colour TV standards.

CO3: Explain new developments in video engineering.

CO4: Identify the need of audio and video compression techniques in real life.

CO5: Differentiate working principles of latest digital TV, hdtv, wdtv.

CO6: Compare use and working principles of latest display like lcd, led plasma and large flat panel monitors

Subject: Operating Systems (ETC605)

CO1: Identify the significance of operating system in computing devices.

CO2: Explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

CO3: Compare and illustrate various process scheduling algorithms.

CO4: Solve different CPU scheduling problem to achieve specific scheduling criteria.

CO5: Illustrate various disk scheduling algorithms.

CO6: Compare the structure of different operating systems.

Subject: VLSI Design (ETC606)

CO1: Describe various fabrication process flow , structure, operation modes and second order effect of MOFET.

CO2: Design an inverter with specified statics/ dynamics characteristics.

CO3: Design combinational circuits using various CMOS style.

CO4: Describe different semiconductor memories , operation and application.

CO5: Apply CMOS design concept to implement RCA,CLA etc.

CO6: Describe various clocking styles and low power design techniques.

BE : VII SEM (CBGS)

Subject: Image and Video Processing (ETC701)

CO1: Explain and apply fundamentals of digital image and video.

CO2: Apply transforms to images for different applications

CO3: Compare and apply various enhancement techniques on images.

CO4: Implement image segmentation techniques and apply morphological processing techniques.

CO5: Apply restoration techniques to degraded images.

CO6: Compare different types of motion estimation techniques to digital videos.

Subject: Mobile Communication (ETC702)

CO1: Design cellular system for given capacity, s/i ratio, frequency reuse, number of users, GoS and traffic intensity

CO2: Compare GSM and CDMA based on architectures, frame structures, system capacity and services provided

CO3: Analyze mobile generations 2G, 3G and 4G w.r.t their characteristics and limitations

CO4: Apply the mobile communication concepts to study the emerging technologies required for 4th generation mobile systems such as SDR and MIMO

CO5: Design and compare different indoor and outdoor propagation models related to losses and different types of fading

CO6: Analyze all generations of mobile communication with respect to spectrum allocation, multiple access, modulation schemes, data rates, services offered, handoff strategies and power control mechanisms

Subject: Optical Communication and Networks (ETC703)

CO1: Apply the fundamental principles of optics and light wave to design optical fiber communication systems.

CO2: Identify structures, fiber materials, fiber fabrication and compare the factors affecting the performance of different optical fiber communication systems.

CO3: Explain working principles of optical fibers, light sources, couplers. Detectors and multiplexers.

CO4: Design optical fiber communication links using appropriate optical fibers, light sources and detectors

CO5: Explore the working principles of modern optical fiber measurement systems.

CO6: Explain optical fiber networks such as SONET/SDH and WDM.

Subject: Microwave and Radar Engineering (ETC704)

CO1: Analyze waveguide and microwave components

CO2: Analyze matching and tuning networks by using smith chart.

CO3: Compare different microwave generation and amplification system.

CO4: Compare different semiconductor devices for microwave generation..

CO5: Explain basics of radar and its types.

CO6: Illustrate applications of microwave devices and radar

Subject: Data Compression and Encryption (ETE701)

CO1: Apply various types of text compression techniques

CO2: Compare various techniques used in image compression.

CO3: Explain various methods of audio compression

CO4: Compare and summarize different cryptographic techniques.

CO5: Analyze and apply methods of cryptography.

CO6: Apply basic security concepts on real time problems.

Subject: Analog and Mixed Signal VLSI (ETE704)

CO1: Differentiate between analog, digital & mixed signal CMOS ICs.

CO2: Analyze & design current sources & voltage references for given specifications.

CO3: Analyze & design single stage MOS amplifiers.

CO4: Analyze & design Operational Amplifiers.

CO5: Analyze & design nonlinear circuits like comparator.

CO6: Analyze data converter circuits.

Subject: Project Stage-I (ETP701)

CO1: Analyze the quality of problem selected by applying engineering knowledge.

CO2: Identify the relevance to the specialization/Industrial trends/Societal and environmental needs.

CO3: Plan, design and estimate the cost, feasibility and scope/Techniques/ tools to be used.

CO4: Perform extensive literature survey and provide partial solution to the problem by following ethics

CO5: Cultivate the habit of working in team along with financial management.

CO6: Prepare, organize and present the documents and acquired knowledge.

Subject: Wireless Networking (ETC801)

CO1: Compare various cellular technologies.

CO2: Design the cellular networks.

CO3: Compare various emerging wireless technologies such as Bluetooth, Zigbee, RFID, WIMAX and UWB.
CO4: Analyze wireless sensor network with respect to architecture, transmission technology & traffic related technologies.

CO5: Explain middleware protocol and network management issues of sensor network.

CO6: Classify & compare network protocols and wireless adhoc sensor networks.

Subject: Satellite Communication (ETC802)

CO1: Explain basics of satellite communication system.

CO2: Explain how a satellite transponder successfully transfers information from one earth

CO3: analyze link budget of satellite signal for proper communication.

CO4: Compare different multiple access systems & explain earth station technology.

CO5: Explain OSI reference model and laser satellite system.
CO6: Comprehend technical details of latest satellites.

Subject: Internet voice Communication (ETC803)

CO1: Explain layered architecture and functioning of TCP/IP and OSI model.

CO2: Compare between application layer protocols.

CO3: Analyze transport layer protocols.

CO4: Design and compare protocols related to network layer.

CO5: Explain Different audio and video compression for voice communication.
CO6: Explain about the real time interactive audio video systems.

Subject: Speech Processing (ETE801)

CO1: Explain speech production mechanism, phoneme classification, digital models for speech production.
CO2: Apply signal processing theory for estimation of speech parameters in time domain including pitch and formants
CO3: Apply signal processing theory for estimation of speech parameters in frequency domain including pitch and formants
CO4: Apply signal processing theory for estimation of speech parameters in cepstral domain including pitch and formants
CO5: Apply signal processing theory for estimation and analysis of speech parameters using linear prediction coefficients

CO6: Explain applications of speech processing in speech compression, speech recognition, and speech synthesis

Subject: Telecom Network Management (ETE802)

CO1: Explain basics of telecommunication network management.

CO2: Analyze the trends and development of the telecommunications network management
 CO3: Apply concepts and architecture behind standards based network management associated with snmp and cmip.
 CO4: Integrate knowledge of communication technologies with appropriate policy, financial and management issues

CO5: Anticipate the way technological change and emerging technologies might alter the assumptions underlying.
CO6: Apply current techniques and skills necessary for network management practice.

Subject: Project Stage-II (ETP801)

 CO1: Simulate and implement their proposed design of the problem.

 CO2: Test and troubleshoot their model/prototype.

 CO3: Compare the proposed work with the one reported in the literature.

 CO4: Present their work through paper publication/presentation/project-exhibition/competition etc.

 CO5: Cultivate the habit of working in team along with financial management.
 CO6: Prepare, organize the documents by following ethics to present the entire project.