



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
2017 SCHEME CO's

| Course Code | Course Name | CO Code | CO |
|-------------|-----------------------------|---------|---|
| 17MAT31 | Engineering Mathematics - 3 | CO1 | Know the use of periodic signals and Fourier series to analyze circuits and system communication. |
| | | CO2 | Explain the general linear system theory for continuous-time signals and digital signal processing using the Fourier transforms and Z-transform. |
| | | CO3 | Employ appropriate Numerical methods to solve algebraic and transcendental equations. |
| | | CO4 | Apply Greens theorem, Divergence theorem and Stokes theorem in various applications in the field of elector-magnetic and gravitational fields and fluid flow problems. |
| | | CO5 | Determine the extremals of functionals and solve the simple problems of the calculus of variations. |
| 17EC32 | Electronic Instrumentation | CO1 | Describe instrument measurement errors and the operation of Ammeters, Voltmeters, Multimeters and develop circuits for multirange Ammeters and Voltmeters. |
| | | CO2 | Understand the functional, operation of Digital voltmeters and describe the instruments to measure voltage, frequency, time period, phase difference of signals, rotation speed, capacitance and pH of solutions. |
| | | CO3 | Discuss the functioning and types of Oscilloscopes and Signal generators |
| | | CO4 | Describe operation of various Analog measuring instruments and AC/DC bridges for passive component for frequency measurements |
| | | CO5 | Learn and discuss the significance and working of different types of transducers |
| 17EC33 | Analog Electronics | CO1 | Acquire the basic knowledge of Analog Electronic Devices such as FET, MOSFET, UJT. |
| | | CO2 | Develop the ability to analyze the performance characteristics and parameters of BJT and FET amplifier using small signal model. |
| | | CO3 | Analyse the parameters which affect the low frequency and high frequency responses of BJT and FET amplifiers. |
| | | CO4 | Analyse the performance of feedback amplifiers and oscillators. |
| | | CO5 | Acquire and Evaluate the efficiency of Power Amplifiers classifications and voltage regulators. |
| 17EC34 | Digital Electronics | CO1 | Develop simplified switching equation using Karnaugh Maps and Quine- McClusky techniques. |
| | | CO2 | Explain the operation of decoders, encoders, multiplexers, demultiplexers, adders, subtractors and comparators. |
| | | CO3 | Explain the working of Latches and Flip Flops (SR,D,T and JK). |
| | | CO4 | Design Synchronous/Asynchronous Counters and Shift registers using Flip Flops. |
| | | CO5 | Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits. |
| 17EC35 | Network Analysis | CO1 | Determine currents and voltages using source transformation/ source shifting/ mesh/ nodal analysis and reduce given network using star-delta transformation/source transformation/ source shifting. |
| | | CO2 | Solve network problems by applying Superposition/ Reciprocity/ Thevenin's/ Norton's/ Maximum Power Transfer/ Millman's Network Theorems and electrical laws to reduce circuit complexities and to arrive at feasible solutions. |
| | | CO3 | Calculate current and voltages for the given circuit under transient conditions and Apply Laplace transform to solve the given network. |
| | | CO4 | Evaluate for RLC elements/ frequency response related parameters like resonant |



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
2017 SCHEME CO's

| | | | |
|------------|---|-----|---|
| | | | frequency, quality factor, half power frequencies, voltage across inductor and capacitor, current through the RLC elements, in resonant circuits |
| | | CO5 | Solve the given network using specified two port network parameter like Z or Y or T or h. |
| 17EC36 | Engineering Electromagnetics | CO1 | Evaluate problems on electric field due to point, linear, volume charges by applying conventional methods or by Gauss law. |
| | | CO2 | Determine potential and energy with respect to point charge and capacitance using Laplace equation |
| | | CO3 | Calculate magnetic field, force, and potential energy with respect to magnetic materials |
| | | CO4 | Apply Maxwell's equation for time varying fields, EM waves in free space and conductors. |
| | | CO5 | Evaluate power associated with EM waves using Poynting theorem. |
| 17ECL37 | 17ECL37- Analog Electronics Lab | CO1 | Test circuits of rectifiers, clipping circuits, clamping circuits. |
| | | CO2 | Determine the characteristics of BJT and FET amplifiers. |
| | | CO3 | Design and test the BJT/FET amplifiers and plot the frequency response. |
| | | CO4 | Compute the performance parameters of BJT power amplifiers and voltage regulators. |
| | | CO5 | Design and test the BJT/FET Oscillators. |
| 17ECL38 | 17ECL38-Digital Electronics Lab | CO1 | Demonstrate the truth table of various expressions and combinational circuits using logic gates. |
| | | CO2 | Design and test various combinational circuits such as adders, subtractors, comparators, multiplexers. |
| | | CO3 | Realize Boolean expression using decoders. |
| | | CO4 | Construct and test flips-flops, counters and shift registers. |
| | | CO5 | Simulate full adder and up/down counters. |
| 17CPH39/49 | 17CPH39/49- Constitution of India, Professional Ethics and Human Rights | CO1 | Learn in details with examples To assimilate and get familiarized with basic information about Indian constitution |
| | | CO2 | Specify in details with examples provide overall legal literacy to the young technocrats to manage complex societal issues in the present scenario. |
| | | CO3 | Learn the characteristics of To identify their individual roles and ethical responsibilities towards society. |
| | | CO4 | Specify in depth To understand engineering ethics & responsibilities |
| | | CO5 | Deliberate in details with application, if applicable, To understand engineering ethics & responsibilities, through the learning of these topics students will be able to understand human rights/ values and its implications in their life. |
| 17MAT41 | Engineering Mathematics - 4 | CO1 | Solve first order ordinary differential equation arising in flow problems using single step and multistep numerical methods |
| | | CO2 | Solve second order ordinary differential equation arising in flow problems using single step numerical methods and Illustrate problems of potential theory, quantum mechanics and heat conduction by employing notions and properties of Bessel's functions and Legendre's polynomials. |
| | | CO3 | Explain the concepts of analytic functions, residues, poles of complex potentials and describe conformal and Bilinear transformation arising in field theory and signal processing. |
| | | CO4 | Develop probability distribution of discrete, continuous random variables and joint probability distribution occurring in digital signal processing, information |



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
2017 SCHEME CO's

| | | | |
|--------|---|-----|---|
| | | | theory and design engineering. |
| | | CO5 | Demonstrate testing of hypothesis of sampling distributions and illustrate examples of Markov chains related to discrete parameter stochastic process. |
| 17EC42 | Signals and Systems | CO1 | Classify the signals as continuous/discrete, periodic/aperiodic, even/odd, energy/power and deterministic/random signals. Determine the linearity, causality, time-invariance and stability properties of continuous and discrete time systems. |
| | | CO2 | Develop input output relationship for linear time invariant system and Compute the response of a Continuous and Discrete LTI system using convolution integral and convolution sum. |
| | | CO3 | Understand System interconnection, system properties in terms of impulse response, step response. Determine the spectral characteristics of continuous and discrete time signal of Periodic Signals using Fourier analysis. |
| | | CO4 | Determine the spectral characteristics of continuous and discrete time signal of Aperiodic Signals using Fourier analysis. Understand the process of sampling and reconstruction of signals. |
| | | CO5 | Understand the basic concept of Z-transform, inverse Z- transform and to develop the ability to analyse transfer functions of complex LTI systems in Z transform. |
| 17EC43 | Control Systems | CO1 | Develop the mathematical model of mechanical and electrical systems and develop transfer function for a given control system using block diagram reduction techniques and signal flow graph method. |
| | | CO2 | Determine the time domain specifications for first and second order systems |
| | | CO3 | Determine the stability of a system in the time domain using Routh Hurwitz criterion and Root locus technique. |
| | | CO4 | Determine the stability of a system in the frequency domain using Nyquist and bode plots. |
| | | CO5 | Understand the basic concept of Z-transform and to develop the ability to analyze system in Z transform. Invert Z-transform by power-series expansion and/or Partial Fraction Expansion. |
| 17EC44 | 17EC44- Principles of Communication Systems | CO1 | Determine the performance of different amplitude modulation and demodulation techniques in time and frequency domain |
| | | CO2 | Determine the performance of different angle modulation and demodulation techniques in time and frequency domain |
| | | CO3 | Characterize analog signals in time domain as random processes and in frequency domain using Fourier transforms. |
| | | CO4 | Characterize influence of channel on performance of analog communication systems. |
| | | CO5 | Understand the characteristics of pulse amplitude modulation, pulse position modulation and pulse code modulation systems |
| 17EC45 | Linear Integrated Circuits | CO1 | Explain Op-Amp circuit and parameters including CMRR, PSRR, Input & Output Impedances and Slew Rate, Design Op-Amp based Inverting, Non-inverting, and Summing & Difference. Amplifier. |
| | | CO2 | AC Amplifiers including Voltage Follower, Test circuits of Op-Amp based Voltage/ Current Sources & Sinks, Current, Instrumentation and Precision Amplifiers. |
| | | CO3 | Test circuits of Op-Amp based linear and non-linear circuits comprising of limiting, clamping, Sample & Hold, Differentiator/ Integrator Circuits, Peak Detectors, Oscillators and Multiplier & Divider. |
| | | CO4 | Design first & second order Low Pass, High Pass, Band Pass, Band Stop Filters and |



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
2017 SCHEME CO's

| | | | |
|--------------------|---|-----|--|
| | | | Voltage Regulators using Op-Amps |
| | | CO5 | Explain applications of linear ICs in phase detector, VCO, DAC, ADC and Timer. |
| 17EC46 | Microprocessor | CO1 | Explain the History and Evolution of microprocessors architecture of 8086, CISC & RISC, Von Neumann and Harvard CPU architecture. |
| | | CO2 | Explain how each assembly language instructions functions with the Intel family and Illustrate the different types of microprocessor instructions with suitable example programs. |
| | | CO3 | Illustrate the structure of stack and interrupts with suitable examples. |
| | | CO4 | Illustrate 8086 to static memory chips and 8255, 8254, 0808 ADC, 0800 DAC, keyboard, Display and Stepper motors. |
| | | CO5 | Use INT 21 DOS interrupt function calls to handle keyboard and display. |
| 17ECL47 | 17ECL47- Microprocessor Lab | CO1 | Write and execute 8086 ALP to perform data transfer, arithmetic and logical operations. |
| | | CO2 | Write and execute 8086 ALP to perform branch and loop operations. |
| | | CO3 | Write and execute 8086 ALP to sort and search elements in a given array and utilize procedures and macros in programming 8086. |
| | | CO4 | Perform string transfer, string reversing, searching a character in a string with string manipulation instructions of 8086 and DOS functional calls. |
| | | CO5 | Demonstrate the interfacing of 8086 with seven segment display, matrix keyboard, logical controller, stepper motor, ADC, DAC and LDR for simple applications. |
| 17ECL48 | 17ECL48-Linear ICs and Communication Lab | CO1 | Illustrate the pulse and flat top sampling techniques using basic circuits. |
| | | CO2 | Demonstrate addition and integration using linear ICs, and 555 timer operations to generate signals/pulses. |
| | | CO3 | Demonstrate AM and FM operations and frequency synthesis. |
| | | CO4 | Design and illustrate the operation of instrumentation amplifier, LPF, HPF, DAC and oscillators using linear IC. |
| | | CO5 | Demonstrate BJT mixer & DSBSC |
| 17KKM39/4 9-ECE | 17KKM39/49- KANNADA MANASU | CO1 | Understand Kannada as administrative Language, Patra Vyavahara & Kannada Grammer. |
| | | CO2 | Become Familiar about Da. Ra. Bendre, Dr. Sir. M Vishveshvaraya, Shivarama Karanth & Kuvempu.BGL Swamy. |
| | | CO3 | Collected information about poets & Authors like Triveni, Su. Ram Ekkundi, P Lankesh, K.P Poornachandra Tejaswi Gandhi story by Besagara halli Ramanna. |
| | | CO4 | Analyse the works of Belgiya haadu by Siddalingaiah, Ella hudugiyara kanassu & story Neethu. |
| | | CO5 | Understand Parisara Lekhana, Vruthi shikshanadalli Kannada madyama & Konave gowda. |
| 17KKL39/4 9-ECE | 17KKL39/49- KANNADA KALI | CO1 | To Read and understand the simple words in Kannada language, meaning in English ,equivalent words in english, grammar, form the sentences in kannada language, dialogue creation, learn about epics. |
| | | CO2 | To learn Kannada for Communication ,enquiries, sentence formation, request writing, conversations and meaning in English, adjectives. |
| | | CO3 | To learn creating present tense kannada sentences, potential forms, no-past continuous , imperative, understanding and answering. |
| | | CO4 | Learn to form Past tense sentences, discussing about a film, describing brindavan garden. |
| | | CO5 | To learn to converse routine activities of a student, grammar, present, past and perfect negations, reflexive, telephonic conversations, and to create some interest on |



ISO 9001:2015 certified Institution
Approved by AICTE, New Delhi
Affiliated to Visvesvaraya Technological University
www.sairamce.edu.in

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
2017 SCHEME CO's

| | | | |
|--|--|--|----------------------------------|
| | | | Kannada Language and Literature. |
|--|--|--|----------------------------------|