College of Engineering, Phaltan
Electronics & Telecommunication Engineering Department

Vision: - To develop overall personality of students to suit for Industry needs.

Mission: - Establish a platform of Electronics & Telecommunication as a Centre

of Excellence

Programme Outcomes

- The graduates will possess the knowledge of differential equations, vector calculus, complex variable, matrix theory, probability theory, physics, chemistry and electrical & electronics engineering.

- The graduate will demonstrate an ability to identify, formulate and solve Electronics & Telecommunication engineering problems.

- The graduates will have an ability to design electronic circuits and systems, analyze and interpret data.

- The graduates will have an ability to design digital and analog systems and components.

- The graduates will possess the knowledge of advanced and emerging topics in the fields of Electronics, Signal Processing and Communication.

- The graduates will demonstrate the skills to use modern engineering tools, software and equipment's to analyze and solve real-life problems.

- The graduate will have broad understanding of the impact of Electronics and Telecommunication field in economic, environmental and social context and also will be aware of the contemporary issues.

- The graduates will possess communication skills necessary to communicate engineering ideas. The skills set include verbal, written and listening skills.

- The graduates will demonstrate the ability to work and collaborate in heterogeneous teams.

- The graduates will demonstrate the awareness of professional and ethical responsibilities

- The graduates will develop self-confidence and ability for lifelong learning

Programme Educational Objectives

- To prepare students to excel in technical fields in order to pursue postgraduate programs or to succeed in industry/technical profession, R&D institutions through global and new emerging areas in Electronics and Telecommunication engineering.

- To provide students with a solid foundation in mathematical, scientific and engineering fundamentals required to solve engineering problems.

- To train students with good scientific and engineering breadth in core subjects so as to comprehend and simulate to cater changing needs of society, analyze, design, and create novel products and solutions for the real life problems.

- To develop in students, professional and ethical attitude, effective communication skills, leadership, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader socioeconomic context.

- To provide students with conducive academic environment, awareness of excellence and the life-long learning needed for successful professional career.

College of Engineering, Phaltan
Electronics & Telecommunication Engineering Department
Course Outcomes
Sem-III

Sr.No.	Subject Name		Course Outcomes
1	Engineering Mathematics-III	CO1	An ability to identify, formulates, and solves Linear differential equation with constant coefficient.
		CO2	Understand application of Linear differential equation with constant coefficient which are related to Electrical engineering Systems.
		CO3	Find the solution by Z- Transform.
		CO4	Understand basic of inverse Laplace transform, Periodic & Heaviside function.
		CO5	Knowledge of periodic function, Euler formulae, Fourier series and their different possible forms.
2	Analog Circuit-I	CO1	Apply knowledge of mathematics, science, and engineering to design, analyze and operation of electronic devices and circuits.
		CO2	Explain basic analog electronic circuit design techniques using diodes and bipolar junction transistors.
		CO3	Explain the hybrid model of transistor and analyze the transistor amplifier (CE, CB, CC) using h-parameters.
		CO4	Analyze and design electronic circuits such as rectifiers, voltage regulators and transistorized amplifiers.
3	Digital Electronics	CO1	Apply Boolean laws/K-Map-method, Quine Mc Cluskey method to reduce a given Boolean function.
		CO2	Demonstrate logical skills, debugging skills in designing small digital circuits for industrial applications
		CO3	Demonstrate the operation of flip-flops, counters and shift registers.
		CO4	Design & realize combinational logic circuits using logic gates, MSI circuits, PLDs for various practical applications.
		CO5	Design Synchronous sequential machine using Moore and Mealy machine
		CO6	Distinguish between various memories and implementation of digital circuits using PLA

Sr.No.	Subject Name		Course Outcomes
4	Network Analysis	CO1	Students can use different network theorems for network analysis
		CO2	Students can find different parameters of two port networks.
		CO3	Students can demonstrate knowledge of resonance in a series and parallel circuits
		CO4	Students can analyze and formulate network function of a network using pole and zero concepts.
		CO5	Students can apply filter approximations to design analog passive filters.
5	Transducers & Measurements	CO1	Student will able to select appropriate transducer as per required.
		CO2	Students will get acquainted with different DAS
		CO3	Student will be able to design instrumentation system
		CO4	Student will able to understand measurement basics and select proper instrument proper particular measurement of electrical parameters.
6	Programming Languages (C, C++)	CO1	Understand the basic programming concepts.
		CO2	Understand the use of arrays to store lists and tables of values.
		CO3	Understand the close relationships among arrays and strings.
		CO4	Understand how a good program design can reduce coding and debugging time.
		CO5	Explain the features of object oriented programming such as objects, classes, user defined data types, enumerations, constructors, destructors, overloading, inheritance polymorphism etc.
		CO6	Design, implement, test, and debug simple programs in an object-oriented programming language.
		CO7	Demonstrate good programming skills.

Sem-IV

Sr. No.	Subject Name		Course Outcomes
1	Analog Circuits	CO1	Explain basic analog electronic circuit design techniques using diodes, bipolar junction transistors and field effect transistors.

3	–II	CO2	Analyze and design electronic circuits such as wave shaping circuits, multistage amplifiers, and power amplifiers.
		CO3	Describe and design different types of oscillators and multivibrators as per given specifications and requirement using bipolar junction transistors and field effect transistors
		CO4	Demonstrate the analytical skills developed while designing the electronic circuits using diodes, bipolar junction transistors and field effect transistors.
2	Linear Integrated Circuits	CO1	Students will be able to select an appropriate Op-amp for a particular application by referring data sheets.
		CO2	Students will be able to design Op-amp based circuit to give specified gain.
		CO3	Students will be able to explain the frequency response characteristics of an amplifier using Op-amp.
		CO4	Students will be able to compute component values to design different Op-amp based circuits which include arithmetic building blocks, filters, waveform generators etc.
		CO5	Students will be able to solve numerical problems related to op-amp circuits.
		CO6	Students will be able to explain the working of various circuits for different applications designed using linear integrated circuits such as IC 741,IC555, IC565,IC566, CA3140and IC177, IC620
		CO7	Students will be able to demonstrate circuit design skills using analog ICs.
3	Data Structure	CO1	Apply knowledge of Programming in the Field of Linear and Non Linear data Structure.
		CO2	Perform the Programs of data Structure using C & C++
		CO3	Logic Development To Design an algorithm form Operation on Linear and Non Linear data Structure.
		CO4	Understand The Concept of Hash Function.
4	Electromagnetic Engineering	CO1	The students will be able to comprehend the fundamentals of Electrostatic and Electromagnetic fields.
		CO2	The students will be able to apply Gauss' law, Ampere's Law, Biot-Savart law, Faraday's law and laws related with steady magnetic field while solving problems in Electrostatic and Electromagnetic fields.
		CO3	The students will be able to develop field equations from understanding of Maxwell's Equations.

		CO4	The students will be able to extend the knowledge of basic properties of transmission lines to analyze electromagnetic wave propagation in generic transmission line geometries.
		CO5	The students will be able to solve problems in Electrostatic & Electromagnetic fields.
		CO6	The students will be able to demonstrate mathematical skills related with differential, integral and vector calculus.
5	Analog Communication Systems	CO1	Understand and identify the fundamental concepts and various components of analog communication systems.
		CO2	Understand, analyze and explain various analog modulation schemes.
		CO3	Understand the performance of analog communications systems under the presence of noise.
		CO4	Develop the ability to compare and contrast the strengths and weaknesses of various communication systems
		CO5	Analyze Basic communications systems and their performance under the presence of noise
		CO6	Differentiate between various pulse modulation techniques
6	Circuit Simulation	CO1	Analyze components associated with modeling and simulation of electronic systems.
		CO2	Demonstrate proficiency in the use of appropriate equipment and devices for simulation of electronic circuit.
		CO3	Analyze electronics devices and circuits using computer simulations.
		CO4	Design/model and troubleshoot of electronic systems.
		CO5	Generate a feasible and efficient PCB layout of the given circuit using software.

Sem-V

Sr. No.	Subject Name		Course Outcomes
1	Antenna and Wave Propagation	CO1	The student will be able to realize the importance of basics of antenna systems to differentiate the applicability of each type of antenna.
		CO2	The student will be able to analyze the utilization of Antenna systems in wide areas like wireless communication, fixed line communication, computer communication etc.
		CO3	The student will be able to solve various problems on various parameters of antennas.

		CO4	The student will be able to analyze different aspects of wave propagation
		CO5	The student will be able to solve the problems accruing in the Ionospheric Propagation of the wave
		CO6	The student will be able to analyze the different Radar systems to utilize in various applications
2	Control Systems	CO1	Apply knowledge of mathematics, science, and engineering to design, analyze and
		CO2	Control the different systems
		CO3	Explain time & frequency domain analysis for different control systems
		CO4	Demonstrate & compare different control systems
3	Signals & Systems	CO1	Define CT signals mathematically & solve problems related to operations on signals.
		CO2	Classify different systems & learn its properties.
		CO3	Understand Fourier series & Transforms and represent different signals using these techniques.
		CO4	Apply different tools like Z-transform, Fourier Transform to analyze the systems.
4	Power Electronics	CO1	Students will be able to understand power electronics DC Drives, devices and its firing circuits.
		CO2	Students will be able to analyze the allied applications of Power Electronics.
		CO3	Students will be able to design simple inverters using MOSFET/ IGBT's
		CO4	Students will be able to describe the PLC/SCADA and other miscellaneous applications.
		CO5	Students will be able to design and analyze Controlled rectifier circuits.
5	Digital Communication	CO1	Realize and solve the problems related to random signals and also the related issues like power spectral density.
		CO2	Work with the information availability and code the information in different formats.
		CO3	acquire knowledge of different source coding techniques available with their pros and cons.
		CO4	Understand the baseband transmission with optical receiver operation and working.
		CO5	Describe the channel coding techniques with error handling methods.
6	Simulation LAB	CO1	Use the different commands, functions required for programming in MATLAB

| | | CO2 | Calculate and perform various operations using MATLAB. |
| | | CO3 | Analyze and simulate the various systems |

Sem-VI

Sr. No.	Subject Name		Course Outcomes
1	Digital Signal Processing	CO1	Apply DFT as an analytical tool.
		CO2	Analyze LTI Systems using FFT algorithms.
		CO3	Design FIR and IIR systems.
		CO4	Implement various DSP Systems on DSP Processor.
2	VLSI Design	CO1	Implement & Demonstrate HDL codes of digital designs using FPGA/ CPLD based technology.
		CO2	Explain the difference between VHDL and Verilog HDL.
		CO3	Model combinational circuits like Adder, Subtractor, Decoder, encoder, multiplexer, parity generator, Parity checker, comparator using different styles of modeling in VHDL&/or Verilog and implement in FPGA/ CPLD using suitable EDA tool.
		CO4	Construct FSM, Model sequential logic circuits like counter & sequence detector and simulate it for functional verification.
		CO5	Describe the features & internal architectures of CPLD (XC 9572) & Spartan IIIE FPGA (XC3S 500E).
3	Microprocessor and Microcontrollers	CO1	Know the architecture of 8085.
		CO2	Write programs over 8085 microprocessors.
		CO3	Interface 8255, 8279, 8155, DAC to 8085.
		CO4	Write programs on simulator of 8085.
		CO5	Know architecture and instruction set of 8051 and PIC microcontrollers.
		CO6	Use the knowledge of instruction set to perform practical over 8051 and PIC microcontrollers.
		CO7	Interface LED and LCD to 8051.
		CO8	Use simulators and down load the programs in Hardware kit.
4	Optical Communication & Network	CO1	The student will be able to elaborate the basic optical communication along with the simulation and modeling tools.
		CO2	The student will be able to differentiate the different types of optical fiber structures and light propagating mechanisms.
		CO3	The student will acquire knowledge of signal degradation mechanism in optical fiber.

Sr. No.	Subject Name		Course Outcomes
		CO4	The student will understand the construction of and working of optical sources and detectors.
		CO5	The student will be able to describe the optical receiver operation
		CO6	The student will be able to describe the WDM and optical network in detail.
5	Industrial Management	CO1	Demonstrate that how a person is get selected in a company, how the performance of employee is evaluated.
		CO2	Analyse the methods of performance appraisal and find the best out of them.
		CO3	Define both marketing and selling concept.
		CO4	Understand the techniques used for selling the product.
6	Electronic System Design	CO1	Students will be able to understand and design simple electronics systems.
		CO2	Students will be able to apply the knowledge of sensors in designing different electronics systems.
		CO3	Students will be able to perform and design electronics systems based on microcontrollers.
		CO4	Students will be able to use these skills to implement mini projects.
		CO5	Students will be able to understand and design simple electronics systems.

Sem-VII

Sr. No.	Subject Name		Course Outcomes
1	Satellite Communication	CO1	Understand Orbital aspects involved in satellite communication.
		CO2	Understand Power budget calculation.
		CO3	Understand Satellite system and services provided.
		CO4	Analyze the performance satellite communication system.
2	Embedded System	CO1	Apply knowledge of PIC and ARM to develop embedded system designs.
		CO2	Students will understand the advantages of ARM architecture and can use the same knowledge to build their projects.
		CO3	They'll be able to write codes for programs in assembly language for ARM core

		CO4	Students will learn use of concepts of RTOS in developing software
3	Computer Communication Networks	CO1	Describe and differentiate types of networks such as LAN, WAN, MAN and network topologies like star, bus, ring topologies like star, bus, ring etc. Explain and distinguish between OSI and TCP/IPetc. Explain and distinguish between OSI and TCP/IP reference model.
		CO2	Summarizes guided & unguided transmission media and different networking devices used at physical layer.
		CO3	Explain error detection &correction mechanisms and frame formats at data link layer.
		CO4	Explain various routing algorithms like shortest path, distance vector, link state etc and congestion control algorithms viz. leaky bucket, token bucket used at network layer.
		CO5	Illustrate different TCP/IP protocols like IP,ARP,RARP,TCP,UDP etc.
		CO6	Demonstrate the network Security Mechanisms.
4	RF & Microwave Engineering	CO1	The student will be able to explain the different types modes propagation in waveguides
		CO2	The student will be able to select the appropriate component for various applications.
		CO3	The student will be able to measure the various microwave parameters.
		CO4	The student will be able to explain the different microwave Hazards.
		CO5	The student will be able to demonstrate the application of Microwave Engineering to various field.
5	Elective-I	CO1	Student can understand basics concept of industrial atomization & Robotic technology
		CO2	Students can able to select different sensors, electronics systems for Robot
		CO3	Student can develop software for particular robotic applications
		CO4	Students will understand robot applications & develop robot for particular applications

Sem-VIII

Sr. No.	Subject Name		Course Outcomes
1	Video Engineering	CO1	Describe picture and sound transmission and reception.
		CO2	Explain color composite video signal.
		CO3	Describe principle of digital TV system.
		CO4	Explain high definition television system.
		CO5	Describe advanced TV system like LCD, plasma, LED,CCTV, etc.
		CO6	Elaborate concept of video conferencing and videophone.
2	Wireless Mobile Communication	CO1	List basic fundamentals of wireless communication
		CO2	Analyze large & small scale radio wave propagation
		CO3	Apply multiple access techniques to mobile communication.
		CO4	Create mobile network.
3	Digital Image Processing	CO1	The student will be able to list fundamental steps involved in Digital Image Processing.
		CO2	The student will be able to apply different image transforms and filtering techniques on an image.
		CO3	The student will be able to apply and analyze image enhancement techniques.
		CO4	The student will be able to demonstrate an application based on image processing.
		CO5	The student will be able to perform operations on color image processing.
4	Elective-II	CO1	Student can learn Basic mechanical operations & Processes
		CO2	Students can understand & implement actuators according to need
		CO3	Student can learn understand PLC , its requirements & development of PLC software
		CO4	Students can Design & Develop Electro-mechanical System