SUMATHI REDDY
INSTITUTE OF TECHNOLOGY FOR WOMEN
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

List of Course for the Academic Year 2023-24

S.No.	Year/sem.	Course Title
1	I/I	Matrices and Calculus
2		Applied Physics
3		C Programming for Engineers
4		Engineering Workshop
5		English for Skill Enhancement
6		Elements of Electronics and Communication Engineering
7		Applied Physics Laboratory
8		English Language and Communication Skills Laboratory
9		C Programming for Engineers Laboratory
10	I/II	Ordinary Differential Equations and Vector Calculus
11		Engineering Chemistry
12		Computer Aided Engineering Graphics
13		Basic Electrical Engineering
14		Electronic Devices and Circuits
15		Applied Python Programming Laboratory
16		Engineering Chemistry Laboratory
17		Basic Electrical Engineering laboratory
18		Electronic Devices and Circuits Laboratory
19	II/I	Analog Circuits
20		Network analysis and Synthesis
21		Digital System Design
22		Signals and Systems
23		Probability Theory and Stochastic Processes
24		Analog communication laboratory
25		Digital System Design laboratory
26		Basic Simulation laboratory
27	II/II	Laplace Transforms, Numerical Methods & Complex Variables
28		Electromagnetic Fields and Waves
29		Analog and Digital Communications
30		Linear IC Applications
31		Electronic Circuit Analysis
32		Analog and Digital Communications laboratory
33		IC Applications laboratory
34		Electronic Circuit Analysis laboratory

35	III/I	Micro Processors and Micro Controllers
36		Digital Communication and Network
37		Control system
38		Business Economic and Financial Analysis
39		Electronic Measurements and Instrumentation
40		Micro Processors and Micro Controllers laboratory
41		Digital Communication and Network laboratory
42		Advanced Communication Skills laboratory
43	III/II	Antennas and Wave Propagation
44		Digital Signal Processing
45		VLSI Design
46		Mobile Communication and Networks
47		Entrepreneurship
48		Digital Signal Processing laboratory
49		ECAD laboratory
50		Scripting language
51	IV/I	Microwave Engineering and optical communication
52		Digital Image Processing
53		Data Base Management Science
54		Profession Practice Law and Ethics
55		Python Programming
56		Microwave Engineering and optical communication laboratory
57	IV/II	Rader system
58		Low power VLSI
59		Non conventional sources of energy
60		Comprehensive Viva
61		Major Project
62		Industry Oriented Mini Project
63		Seminar

Course Outcomes for the Academic Year 2023-24

S.NO	YEAR/SEM.	COURSE NAME	COURSE OUTCOME
1	I/I	Matrices and calculus	1.Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations
			2.Find the Eigen values and Eigen vectors
			3.Reduce the quadratic form to canonical form using orthogonal transformations.
			4.Solve the applications on the mean value theorems.
			5.Evaluate the improper integrals using Beta and Gamma functions
			6.Find the extreme values of functions of two variables with/ without constraints.
			7.Evaluate the multiple integrals and apply the concept to find areas, volumes
2	I/I	Applied Physics	1.Understand physical world from fundamental point of view by the concepts of Quantum mechanics and visualize the difference between conductor, semiconductor, and an insulator by classification of solids.
			2.Identify the role of semiconductor devices in science and engineering Applications.
			3.Explore the fundamental properties of dielectric, magnetic materials and energy for their applications.
			4.Appreciate the features and applications of Nanomaterials.
			5.Understand various aspects of Lasers and Optical fiber and their applications in diverse fields
3	I/I	C Programming For Engineers	1.Draw flowcharts for solving arithmetic and logical problems
			2.Develop modular reusable code by understanding concepts of functions.
			3.Formulate algorithms and programs using arrays, pointers, strings and structures.
			4.Write a programs using Searching and sorting algorithms

4	I/I	Engineering Workshop	1.Study and practice on machine tools and their operations
			2.Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding.
			3.Identify and apply suitable tools for different trades of Engineering processes including drilling material removing, measuring, chiseling.
			4.Apply basic electrical engineering knowledge for house wiring practice.
5	I/I	English For Skill Enhancement	1.Understand the importance of vocabulary and sentence structures.
			2.Choose appropriate vocabulary and sentence structures for their oral and written communication.
			3.Demonstrate their understanding of the rules of functional grammar.
			4.Develop comprehension skills from the known and unknown passages.
			5.Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
6	I/I	Elements Of Electronics And Communication Engineering	1.Identify the different components used for electronics applications
			2.Measure different parameters using various measuring instruments
			3.Distinguish various signal used for analog and digital communications.
7	I/I	Applied Physics Laboratory	1.Know the determination of the Planck's constant using Photo electric effect and identify the material whether it is n-type or p-type by Hall experiment.
			2.Appreciate quantum physics in semiconductor devices and optoelectronics.
			3.Gain the knowledge of applications of dielectric constant.
			4.Understand the variation of magnetic field and behavior of hysteresis curve.
			5.Carried out data analysis
8	I/I	C Programming For Engineers Laboratory	1.Write algorithms and to draw flowcharts for solving problems and

			translate the algorithms/flowcharts to programs (in C language).
			2.Use functions to develop modular reusable code.
			3.Use arrays, pointers, strings and structures to formulate algorithms and programs.
			4.Understand Searching and sorting algorithms
9	I/I	English Language And Communication Skills Laboratory	1.Understand the nuances of English language through audio- visual experience and group activities
			2.Neutralise their accent for intelligibility
			3.Speak with clarity and confidence which in turn enhances their employability skills
10	I/II	Ordinary Differential Equations And Vector Calculus	1.Identify whether the given differential equation of first order is exact or not
			2.Solve higher differential equation and apply the concept of differential equation to real world problems.
			3.Use the Laplace transforms techniques for solving ODE's.
			4.Evaluate the line, surface and volume integrals and converting them from one to another
11	I/II	Engineering Chemistry	1.Students will acquire the basic knowledge of electrochemical procedures related to corrosion and its control.
			2.The students are able to understand the basic properties of water and its usage in domestic and industrial purposes.
			3.They can learn the fundamentals and general properties of polymers and other engineering materials.
			4.They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.
12	I/II	Computer Aided Engineering Graphics	1.Apply Computer Aided drafting tools to create 2-D and 3-D objects.
			2.Sketch conics and different types of solids

			3.Appreciate the need of sectional views of solids and development of surfaces of solids
			4.Read and Interpret engineering drawings
			5.Conversion of Orthographic projection into isometric view and vice-versa manually and by using computer aided drafting
13	I/II	Basic Electrical Engineering	1.Understand and analyze basic Electrical circuits
			2.Study the working principles of Electrical Machines and Transformers
			3.Introduce components of Low Voltage Electrical Installations.
14	I/II	Electronic Devices And Circuits	1.Acquire the knowledge of various electronic devices and their use on real life.
			2.Know the applications of various devices.
			3.Acquire the knowledge about the role of special purpose devices and their applications
15	I/II	Applied Python Programming Laboratory	1.Build basic programs using fundamental programming constructs
			2.Write and execute python codes for different applications
			3.Capable to implement on hardware boards
16	I/II	Engineering Chemistry Laboratory	1.Determination of parameters like hardness of water and rate of corrosion of mild steel in various conditions.
			2.Able to perform methods such as conductometry, potentiometry and pH metry in order to find out the concentrations or equivalence points of acids and bases.
			3.Students are able to prepare polymers like bakelite and nylon-6.
			4.Estimations saponification value, surface tension and viscosity of lubricant oils.
17	I/II	Basic Electrical Engineering Lab	1.Verify the basic Electrical circuits through different experiments.
			2.Evaluate the performance calculations of Electrical Machines and

			Transformers through various testing methods.
			3.Analyze the transient responses of R, L and C circuits for different input conditions.
18	I/II	Electronic Devices And Circuits Laboratory	1.Acquire the knowledge of various semiconductor devices and their use in real life.
			2.Design aspects of biasing and keep them in active region of the device for functional circuits
			3.Acquire the knowledge about the role of special purpose devices and their applications
19	II/I	Analog Circuits	1. Design the amplifiers with various biasing techniques.
			2. Design single stage amplifiers using BJT and FET
			3. Design multistage amplifiers and understand the concepts of High Frequency Analysis of BJT.
			4. Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to sustained oscillations.
20	II/I	Network analysis and Synthesis	1.Gain the knowledge on basic RLC circuits behavior.
			2. Analyse the Steady state and transient analysis of RLC Circuits.
			3. Characterization of two port network parameters.
			4. Analyse the Design aspect of various filters and attenuators
21	II/I	Digital System Design	1.Understand the numerical information in different forms and Boolean Algebra theorems.
			2. Postulates of Boolean algebra and to minimize combinational functions.
			3. Design and analyze combinational and sequential circuits
			4. Known about the logic families and realization of logic gates.
22	II/I	Signals And Systems	1. Differentiate various signal functions.
			2. Differentiate various signal functions.

			3. Differentiate various signal functions.
			4. Analyze the signals with different transform technique
23	II/I	Probability Theory And Stochastic Processes	1. Understand the concepts of Random Process and its Characteristics.
			2. Understand the response of linear time Invariant system for a Random Processes.
			3. Determine the Spectral and temporal characteristics of Random Signals.
			4.Understand the concepts of Noise in Communication systems.
24	II/I	Analog Circuits Lab	1. An ability to verify the working of different diodes, transistors, CRO probes and measuring instruments. Identifying the procedure of doing the experiment.
			2. An ability to design the circuits with basic semiconductor devices (active &passive elements), measuring instruments & power supplies that serves many practical purposes.
			3. An ability to construct, analyze and troubleshoot the designed circuits.
			4.Compute frequency response of various amplifiers
			5.Understand the principles of SCR
25	II/I	Digital System Design Lab	1.Understand the numerical information in different forms and Boolean Algebra theorems.
			2. Postulates of Boolean algebra and to minimize combinational functions.
			3. Design and analyze combinational and sequential circuits
			4. Known about the logic families and realization of logic gates.
26	II/I	Basic Simulation Laboratory	1.Generate, analyze and perform various operations on Signals/Sequences both in time andFrequency domain
			2. Analyze and Characterize Continuous and Discrete Time Systems both in Time and Frequency domain along with the concept of Sampling.

			3. Generate different Random Signals and capable to analyze their Characteristics
			4. Apply the Concepts of Deterministic and Random Signals for Noise removal Applications and
			on other Real Time Signals
27	II/II	Laplace Transforms	1Use the Laplace transforms techniques for solving ODE's
			2. Find the root of a given equation.
			3. Estimate the value for the given data using interpolation.
			4. Find the numerical solutions for a given ODE's
			5.Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems.
			6. Taylor's and Laurent's series expansions of complex Function
28	II/II	Electromagnetic Fields and Waves	1.Get the knowledge of Basic Laws, Concepts and proofs related to Electrostatic Fields and Magnetostatic Fields.
			2. Distinguish between the static and time-varying fields, establish the corresponding sets of
			Maxwell's Equations and Boundary Conditions.
			3. Analyze the Wave Equations for good conductors, good dielectrics and evaluate the UPW Characteristics for several practical media of interest.
			4. To analyze completely the rectangular waveguides, their mode characteristics, and design waveguides for solving practical problems
29	II/II	Analog and Digital Communications	1. Analyze and design of various continuous wave and angle modulation and demodulation techniques
			2. Understand the effect of noise present in continuous wave and angle modulation techniques.
			3. Attain the knowledge about AM , FM Transmitters and Receivers
			4. Analyze and design the various Pulse Modulation Techniques.

			5. Understand the concepts of Digital Modulation Techniques and Baseband transmission.
30	II/II	LINEAR IC APPLICATIONS	1. A thorough understanding of operational amplifiers with linear integrated circuits
			2.Attain the knowledge of functional diagrams and applications of IC 555 and IC 565
			3. Acquire the knowledge about the Data converters.
31	II/II	Electronic Circuit Analysis	1. Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.
			2.Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations
			3.Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
			4.Design Multi vibrators and sweep circuits for various applications.
32	II/II	Analog and Digital Communications Lab	1. To design and perform various analogue modulation techniques
			2. To design and perform various digital modulation techniques
33	II/II	Linear IC Applications Lab	1. A thorough understanding of operational amplifiers with linear integrated circuits
			2.Attain the knowledge of functional diagrams and applications of IC 555 IC 565
			3. Acquire the knowledge about the Data converters.
34	II/II	Electronic Circuit Analysis Lab	1. Develop the Ability to understand the design and working of BJT / FET amplifiers.
			2. Observe the effect of negative feedback on different parameters of an Amplifier and different types of negative feedback topologies.
			3. Observe the effect of positive feedback and able to design and working of different Oscillators using BJTS.

35	III/I	Microprocessors and Microcontrollers	1. Understands the internal architecture, organization and assembly language programming of 8086 processors
			2.Understands the internal architecture, organization and assembly language programming of 8051/controllers.
			3.Understands the interfacing techniques to 8086 and 8051 based systems
			4. Understands the internal architecture of ARM processors and basic concepts of advanced ARM Processors
36	III/I	Data Communications and Networks	1.Know the Categories and functions of various Data communication Networks
			2.Design and analyze various error detection techniques
			3.Demonstrate the mechanism of routing the data in network layer
			4.Know the significance of various Flow control and Congestion control Mechanisms
			5.Know the Functioning of various Application layer Protocols.
37	III/I	Control Systems	1.Understand the modeling of linear-time-invariant systems using transfer function and state-space representations.
			2.Understand the concept of stability and its assessment for linear-time invariant systems.
			3.Design simple feedback controllers
38	III/I	BEFA	1.To study firms financial statements.
			2.To analyse the financial position of company.
39	III/I	Electronic Measurements And Instrumentation	1. Measure electrical parameters with different meters and understand the basic definition of measuring parameters
			2 Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals .
			3.Operate an Oscilloscope to measure various signals

			4.Measure various physical parameters by appropriately selecting the transducers
40	III/I	Microprocessor and Microcontroller lab	1.Design and develop assembly programs using 80xx assembly language instructions.
			2.Analyze the functioning of hardware devices and interfacing them into 80XX family
41	III/I	Data Communications and Networks Lab	1. Understand the structure and organization of computer networks; including the division into network layers, role of each layer, and relationships between the layers.
			2. Understand the basic concepts of application layer protocol design; including client/server models, peer to peer models, and network naming.
			3. In depth understanding of transport layer concepts and protocol design; including connection oriented and connection-less models, techniques to provide reliable data delivery and algorithms for congestion control and flow control.
42	III/I	ACS LAB	1. Acquire vocabulary and use it contextually
			2. Listen and speak effectively
			3. Develop proficiency in academic reading and writing
			4. Increase possibilities of job prospects
			5. Communicate confidently in formal and informal contexts
43	III/II	Antennas and Wave Propagation	1. Characterize the antennas based on frequency, configure the geometry and establish the radiation patterns of VHF, UHF and Microwave antennas and also antenna arrays
			2.Specify the requirements for microwave measurements and arrange a setup to carry out the antenna far zone pattern and gain measurements in the laboratory.

			3. Classify the different wave propagation mechanisms, determine the characteristic features of different wave propagations, and estimate the parameters involved.
44	III/II	Digital Signal Processing	1.Understand the LTI system characteristics and Multirate signal processing.
			2.Understand the inter-relationship between DFT and various transforms.
			3.Design a digital filter for a given specification.
			4.Understand the significance of various filter structures and effects of round off errors.
45	III/II	VLSI Design	1. Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors.
			2. Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
			3. Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.
			4. Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system.
46	III/II	Mobile Communications And Networks	1. Known the evolution of cellular and mobile communication system.
			2. The student will be able to understand Co-Channel and Non-Co-Channel interferences.
			3. Understand impairments due to multipath fading channel and how to overcome the different fading effects.
			4. Familiar with cell coverage for signal and traffic, diversity, techniques, frequency management, Channel assignment and types of handoff.
			5. Know the difference between cellular and Adhoc Networks and design goals of MAC Layer protocol.
47	III/II	Entrepreneurship	1. Learners will pick up about foundation of entrepreneurship development and its theories.

			2.learners will explore enterprenetical skill and management function of company with special reference to sme sector.
			3. understand various steps involved in starting aventure and explore marketing method and new trends in entrepreneurship.
			4. identify the type of enterprenur and steps involved in entrepreneurial venture.
48	III/II	Digital Signal Processing Lab	1.Determine the sampling frequency required for a multispectral signal.
			2.Perform convolution of two a periodic and periodic sequences. Further, verify the properties of the convolution.
			3.Perform correlation and verify its properties.
			4.Obtain the transform domain representation of a sequence using the DFT and FFT. Plot the magnitude and phase spectrum. Apply the DFT properties to obtain the transformed domain representation in an efficient way.
			5.Determine the order of the system described in terms of the difference equation and solve to obtain the response of the system.
			6.Design the FIR and IIR filter for the given specifications
49	III/II	E-CAD Lab	1.To design various combinational and sequential circuits using HDL
			2.To design various combinational and sequential circuits using EDA (Electronic Design Automation)
50	III/II	Scripting Languages Lab	1.Ability to understand the differences between Scripting languages and programming languages
			2.Able to gain some fluency programming in Ruby, Perl, TCL
51	IV/I	Microwave and Optical Communications	1.Known power generation at microwave frequencies and derive the performance characteristics.
			2.Realize the need for solid state microwave sources and understand the principles of solid state devices.

			3.Distinguish between the different types of waveguide and ferrite components, and select proper components for engineering applications
			4.Understand the utility of S-parameters in microwave component design and learn the measurement procedure of various microwave parameters.
			5.Understand the mechanism of light propagation through Optical Fibres.
52	IV/I	Digital Image Processing	1.Exploration of the limitations of the computational methods on digital images.
			2.Expected to implement the spatial and frequency domain image transforms on enhancement and restoration of images.
			3.Elaborate understanding on image enhancement techniques.
			4.Expected to define the need for compression and evaluate the basic compression algorithms.
			4.Familiarity with database storage structures and access techniques
53	IV/I	Data Base Management System	1.Gain knowledge of fundamentals of DBMS, database design and normal forms
			2.Ability to identify information system requirements for both of them such as client and server.
			3.Design and develop software product using conventional and modern principles of software project management
			4.Familiarity with database storage structures and access techniques
54	IV/I	Professional Practice, Law & Ethics	1. The students will understand the importance of professional practice
			2. Law and Ethics in their personal lives and professional careers
			3. The students will learn the rights and responsibilities as an employee, team member and a global citizen

55	IV/I	Python Programming	1.Examine Python syntax and semantics and be fluent in the use of Python flow control and functions. 2.Demonstrate proficiency in handling Strings and File Systems.
			3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries· and use Regular Expressions.
			4. Interpret the concepts of Object-Oriented Programming as used in Python.
			5. Implement exemplary applications related to Network Programming, Web Services and· Databases in Python
56	IV/I	Microwave Engineering and optical Communication LAB	1.Explain and Perform the Reflex klystron Characteristics using Microwave bench setup
			2.Explain and Perform the Gunn diode Characteristics using Microwave bench setup
			3.Measure the Frequency, attenuation, VSWR, Impedance using Klystron Bench Setup
			4.Study the characteristics of light sources, measure optical losses, Numerical aperture.
57	IV/II	Radar Systems	1.The student will be able to derive the complete radar range equation.
			2.The student will be able to understand the need and functioning of CW, FM-CW and MTI radars
			3.The student will be able to known various Tracking methods.
			4.The student will be able to derive the matched filter response characteristics for radar receivers.
58	IV/II	Low Power VLSI Design	1. Understand the need of Low power circuit design.
			2.Attain the knowledge of architectural approaches.
			3. Analyze and design Low-Voltage Low-Power combinational circuits.
			4. Known the design of Low-Voltage Low-Power Memories
59	IV/II	Non-Conventional Source of Energy	1.Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a

			working knowledge on types of fuel cells
			2.Estimate the solar energy, Utilization of it, Principles involved in solar energy
			3.Illustrate ocean energy and explain the operational methods of their utilization.
60	IV/II	Comprehensive Viva	1.Recall the knowledge in basic engineering subjects.
			Apply the core subject knowledge to solve the complex engineering problems.
			2.Develop professional skills and communication skills.
			3.Apply critical thinking to improve problem solving ability.
			4.Assess the understanding ability in core subjects.
61	IV/II	Industry Oriented Mini Project	1.Discover potential research areas in the field of Electronics and communication engineering
			2.urvey of several available literature in the preferred field of study and contrast the several existing solutions for research challenge
			3.Demonstrate an ability to work in teams and manage the conduct of the research study.
			4.Formulate and propose a plan for creating a solution for the research plan identified
			5.To present and report the findings of the study conducted in the preferred domain
62	IV/II	Major Project	1.Design potential research areas in the field of Electronics and communication engineering
			2.Use available literature in the preferred field of study and contrast the several existing solutions for research challenge
			3.Demonstrate an ability to work in teams and manage the conduct of the research study.

			4.Formulate and propose a plan for creating a solution for the research plan identified
			5.Examine the findings of the study conducted in the preferred domain
63	IV/II	Seminar	1.Recall the knowledge in basic engineering Courses.
			2.Prepare the report of technical seminar
			3.Develop professional skills and communication skills.
			4.Explain existed methodology
			5.Assess the understanding ability in core Courses.