

## DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

### SEMESTER-III

<b>NAME OF COURSE:</b>		<b>Engineering Mathematics – III</b>	
<b>COURSE CODE:</b>	<b>ET211</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SRK</b>

#### Course Outcomes:

<b>ET211.1</b>	Solve higher order linear differential equation related to electrical circuit theory
<b>ET211.2</b>	Express a function in terms of sines and cosines components so as to model simple periodic functions.
<b>ET211.3</b>	Find the relation between two variables for the given data using regression and can explain various probability distribution functions.
<b>ET211.4</b>	Apply Laplace and inverse Laplace transforms for analysis of simple electrical circuits.
<b>ET211.5</b>	Apply numerical methods for solving linear equations and for evaluating the definite integrals.
<b>ET211.6</b>	Solve the problems of Fourier integral and Fourier transform.



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Electronic Circuit Analysis and Design</b>	
<b>COURSE CODE:</b>	<b>ET212</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SPS</b>

**Course Outcomes:**

<b>ET212.1</b>	Student can analyze and design electronic circuit using multistage amplifier for given specifications.
<b>ET212.2</b>	Student can analyze and design feedback amplifier.
<b>ET212.3</b>	Student can analyze and design oscillators.
<b>ET212.4</b>	Student can analyze power amplifiers.
<b>ET212.5</b>	Students will be able to analyze the working of JFET, MOSFET and applications of these devices.



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<b>NAME OF COURSE:</b>		<b>Network Theory &amp; Analysis</b>	
<b>COURSE CODE:</b>	<b>ET213</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

**Course Outcomes:**

<b>ET213.1</b>	Analyze linear circuit with use of different network theorems and analysis methods
<b>ET213.2</b>	Compute two port network parameters and draw equivalent network.
<b>ET213.3</b>	Determine transient and steady state response of linear circuits.
<b>ET213.4</b>	Design passive filter and attenuator circuits

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<b>NAME OF COURSE:</b>		<b>Digital Techniques</b>	
<b>COURSE CODE:</b>	<b>ET214</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SPT</b>

### Course Outcomes:

<b>ET214.1</b>	Demonstrate the use of codes and k-map minimization, Quine-McClusky techniques in digital circuits.
<b>ET214..2</b>	Design combinational logic circuits using logic gates.
<b>CS214..3</b>	Illustrate the use and significance of logic IC families and flip-flops in digital circuits.
<b>ET214..4</b>	Design asynchronous and synchronous sequential logic circuits.
<b>ET214..5</b>	Apply concepts of synchronous state machines for designing digital applications.



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<b>NAME OF COURSE:</b>		<b>Analog Communication</b>	
<b>COURSE CODE:</b>	<b>ET215</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SMJ</b>

**Course Outcomes:**

<b>ET215.1</b>	Understand and identify the fundamental concepts and various components of analog communication systems.
<b>ET215.2</b>	Explain signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system.
<b>ET215.3</b>	Describe analog pulse modulation techniques and digital modulation technique
<b>ET215.4</b>	Develop the ability to compare and contrast the strengths and weaknesses of various communication systems.



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<b>NAME OF COURSE:</b>		<b>Electronic Software Lab-I</b>	
<b>COURSE CODE:</b>	<b>ET216</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>F.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MSN</b>

**Course Outcomes:**

<b>ET216.1</b>	Implement functions using C++.
<b>ET216.2</b>	Implement Inheritance and Polymorphism using C++.
<b>ET216.3</b>	Use functions and modules using Python.

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**SEMESTER-IV**

<b>NAME OF COURSE:</b>		<b>Control Systems</b>	
<b>COURSE CODE:</b>	<b>ET221</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MDM</b>

**Course Outcomes:**

<b>ET221.1</b>	Analyze various control systems.
<b>ET221.2</b>	Calculate transfer function and draw mathematical models for control systems
<b>ET221.3</b>	Obtain transfer function of systems using signal flow graph and block diagram reduction.
<b>ET221.4</b>	Analyze control system in time domain.
<b>ET221.5</b>	Determine stability of systems.
<b>ET221.6</b>	Analyze control system in frequency domain and state space.



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<b>NAME OF COURSE:</b>		<b>Analog Integrated Circuits</b>	
<b>COURSE CODE:</b>	<b>ET222</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.AAK</b>

**Course Outcomes:**

<b>ET222.1</b>	Describe fundamentals of op amp and compare characteristics of ideal and practical op amp
<b>ET222.2</b>	Understand and analyze frequency response of op amp
<b>ET222.3</b>	Develop various Linear and Nonlinear applications of op amp
<b>ET222.4</b>	Design first order and second order filters
<b>ET222.5</b>	Understand and describe the concept of special ICs and its applications



## DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

<b>NAME OF COURSE:</b>		<b>Principles of Digital Communication</b>	
<b>COURSE CODE:</b>	<b>ET223</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SSH</b>

### Course Outcomes:

<b>ET223.1</b>	Describe & calculate information measures and apply source coding techniques for the memoryless discrete sources.
<b>ET223.2</b>	Apply binary block coding techniques for error detection & correction and estimate error detection & correction capabilities of block code.
<b>ET223.3</b>	Explicate, demonstrate and analyze different pulse code modulation techniques
<b>ET223.4</b>	Explain, demonstrate and analyze binary and M-ary digital modulation techniques and compare them.
<b>ET223.5</b>	Describe mathematical & analytical concepts of matched filter & correlation receivers and explain synchronization techniques.



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<b>NAME OF COURSE:</b>		<b>Signals &amp; Systems</b>	
<b>COURSE CODE:</b>	<b>ET224</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

**Course Outcomes:**

<b>ET224.1</b>	Represent different signals and systems mathematically and characterize their behavior graphically
<b>ET224.2</b>	Solve numerical on convolution integral, Convolution sum and Sampling theorem
<b>ET224.3</b>	Realize LTI system equations by using different forms
<b>ET224.4</b>	Calculate Fourier transform and plot Amplitude and Phase spectrum
<b>ET224.5</b>	Calculate ZT of a function and plot its ROC



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<b>NAME OF COURSE:</b>		<b>Data Structures</b>	
<b>COURSE CODE:</b>	<b>ET225</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SSH</b>

**Course Outcomes:**

<b>ET225.1</b>	Analyze the algorithms to determine the time and computation complexity and justify the correctness.
<b>ET225.2</b>	Implement given Search problem (Linear Search and Binary Search).
<b>ET225.3</b>	Implement given problem of Stacks, Queues and linked list. Also, analyze the same to determine the time and computation complexity.
<b>ET225.4</b>	Write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.
<b>ET225.5</b>	Implement Graph search and traversal algorithms and determine the time and computation complexity.



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<b>NAME OF COURSE:</b>		<b>Electronic Software Lab-II</b>	
<b>COURSE CODE:</b>	<b>ET226</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>S.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MDM</b>

### Course Outcomes:

<b>ET226.1</b>	Write Python scripts using procedure and object oriented approach of writing a computer program.
<b>ET226.2</b>	Exhibit ability to use Python's standard library packages to provide solution to a given problem
<b>ET226.3</b>	Test and debug python script for a given problem.

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**SEMESTER-V**

<b>NAME OF COURSE:</b>		<b>ELECTROMAGNETIC FIELD THEORY</b>	
<b>COURSE CODE:</b>	<b>ET311</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Dr.SSS</b>

**Course Outcomes:**

<b>ET311.1</b>	Define and recognize different co-ordinate systems and apply divergence, gradient, curl to EM waves
<b>ET311.2</b>	Derive the laws of electrostatic, magneto static fields and electromagnetic wave equation
<b>ET311.3</b>	Apply Maxwell's equations for static, Time varying and Harmonic field.
<b>ET311.4</b>	Calculate transmission line parameters.
<b>ET311.5</b>	Apply knowledge of Smith chart to determine transmission line parameters.

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<b>NAME OF COURSE:</b>		<b>MICROCONTROLLERS AND APPLICATIONS</b>	
<b>COURSE CODE:</b>	<b>ET312</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.AAK</b>

### Course Outcomes:

<b>ET312.1</b>	Expose the fundamental features and operation of contemporary microcontroller
<b>ET312.2</b>	Demonstrate and perform hardware interfacing.
<b>ET312.3</b>	Explore the students to the fundamentals of CISC and RISC Microcontroller architectures
<b>ET312.4</b>	Introduce the various core and peripheral features in microcontroller family.
<b>ET312.5</b>	Develop applications programs in assembly language and C language for microcontrollers

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<b>NAME OF COURSE:</b>		<b>Digital Signal Processing</b>	
<b>COURSE CODE:</b>	<b>ET313</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VRM</b>

### Course Outcomes:

<b>ET313.1</b>	Solve problems based on Correlation and DFT.
<b>ET313.2</b>	Analyze response of the system using linear filtering.
<b>ET313.3</b>	Calculate FFT of the Discrete signal
<b>ET313.4</b>	Calculate and analyze FIR & IIR filter coefficients using different techniques.
<b>ET313.5</b>	Realize transfer function of FIR & IIR filters using different methods.
<b>ET313.6</b>	Apply concepts of DSP in various applications

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<b>NAME OF COURSE:</b>		<b>OPEN ELECETIVE-I</b>	
		<b>Managerial Economics</b>	
<b>COURSE CODE:</b>	<b>ET314.1</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

**Course Outcomes:**

<b>ET314.1</b>	Elaborate the concepts of managerial economics
<b>ET314.2</b>	Analyze the issues related to demand, supply and market
<b>ET314.3</b>	Use different tools for demand analysis and forecasting
<b>ET314.4</b>	Analyze the production and cost functions.
<b>ET314.5</b>	Decide price on the basis of market, demand and supply



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<b>NAME OF COURSE:</b>		<b>OPEN ELECETIVE-I</b>	
		<b>Project Management and Operation Research</b>	
<b>COURSE CODE:</b>	<b>ET314.2</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

### Course Outcomes:

<b>ET314.2.1</b>	To understand fundamental components of Project Management.
<b>ET314.2.2</b>	To understand different aspects of activity planning, Scheduling and risk Management techniques.
<b>ET314.2.3</b>	To know about Operations Research and LPP.
<b>ET314.2.4</b>	To understand different models used in Operations Research



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### **DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING**

<b>NAME OF COURSE:</b>		<b>ELECTRONIC SOFTWARE LAB-III</b>	
<b>COURSE CODE:</b>	<b>ET316</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VNJ</b>

### **Course Outcomes:**

<b>ET316.1</b>	Implement Object oriented features and server-side programming
<b>ET316.2</b>	Use Java runtime library APIs for implementing functionality of various applications
<b>ET316.3</b>	Implement exceptional handling through Java programming for a given problem.
<b>ET316.4</b>	Select appropriate Java runtime library APIs to create GUI and web application using Java language.



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**SEMESTER-VI**

<b>NAME OF COURSE:</b>		<b>ANTENNA AND WAVE PROPOGATION</b>	
<b>COURSE CODE:</b>	<b>ET321</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SPS</b>

**Course Outcomes:**

<b>ET321.1</b>	Identify basic antenna parameters.
<b>ET321.2</b>	Analyze radiation pattern of various antennas.
<b>ET321.3</b>	Illustrate techniques for antenna parameter measurements
<b>ET321.4</b>	Identify the characteristics of radio wave propagation.
<b>ET321.5</b>	Understand the various applications of antenna.



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<b>NAME OF COURSE:</b>		<b>EMBEDDED SYSTEMS</b>	
<b>COURSE CODE:</b>	<b>ET322</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>DR.KCM</b>

**Course Outcomes:**

<b>ET322.1</b>	Student can describe hardware and software architecture of embedded system.
<b>ET322.2</b>	Student can describe ARM7TDMI core architecture and Controller based on this architecture
<b>ET322.3</b>	Student can write C program for different applications for LPC2148microcontroller.
<b>ET322.4</b>	Student can interface different peripherals with LPC2148 microcontroller.
<b>ET322.5</b>	Student can describe microcontroller based real time systems for different applications.



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<b>NAME OF COURSE:</b>		<b>ELECTRONIC SYSTEM DESIGN</b>	
<b>COURSE CODE:</b>	<b>ET323</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Dr.SSS</b>

**Course Outcomes:**

<b>ET323.1</b>	Describe construction, working & analyze characteristics of thyristors
<b>ET323.2</b>	Analyze AC and DC power control circuits using thyristors.
<b>ET323.3</b>	Design and implement timers, frequency counters, digital voltmeters and frequency synthesizers.
<b>ET323.4</b>	Design and simulate Communication system components for system design.
<b>ET323.5</b>	Design and analyze controllers for industrial applications.

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<b>NAME OF COURSE:</b>		<b>(Professional Elective-I)- Optical Fiber Communication</b>	
<b>COURSE CODE:</b>	<b>ET324.1</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MSN</b>

### Course Outcomes:

<b>ET324.1.1</b>	Demonstrate working of optical fiber.
<b>ET324.1.2</b>	Explain transmission characteristics of optical fibers & concept of optical joints.
<b>ET324.1.3</b>	Illustrate different optical sources & optical detectors.
<b>ET324.1.4</b>	Solve the numerical to calculate the various parameters of optical sources & detectors.
<b>ET324.1.5</b>	Explain the different types of optical amplifier & optical networks.
<b>ET324.1.6</b>	Analyze the functional blocks in optical communication system.

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<b>NAME OF COURSE:</b>		<b>(Professional Elective-I)- Image and Video Processing</b>	
<b>COURSE CODE:</b>	<b>ET324.2</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>SPT</b>

**Course Outcomes:**

<b>ET324.2.1</b>	Describe and performs basic operations on image and video
<b>ET324.2.2</b>	Design and apply filter on images in spatial and frequency domain.
<b>ET324.2.3</b>	Analyze and implement algorithm for image and video processing application using modern tools.
<b>ET324.2.4</b>	Select and apply appropriate technique for preprocessing, segmentation and feature extraction of images and videos in real time applications.

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<b>NAME OF COURSE:</b>		<b>(Professional Elective-I)- Multimedia Communication Technology</b>	
<b>COURSE CODE:</b>	<b>ET324.3</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SPT</b>

### Course Outcomes:

<b>ET324.3.1</b>	Illustrate working of monochrome and color television transmitter and receiver.
<b>ET324.3.2</b>	Understand and compare different types of modern color televisions.
<b>ET324.3.3</b>	Acquire knowledge of latest digital TV systems and applications.
<b>ET324.3.4</b>	Understand the concept of multimedia and data representation.
<b>ET324.3.5</b>	Analyze different audio and video compression techniques.





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<b>NAME OF COURSE:</b>		<b>(Open Elective-II)- Sensors and Applications</b>	
<b>COURSE CODE:</b>	<b>ET325.1</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.AAK</b>

**Course Outcomes:**

<b>ET325.1.1</b>	Elaborate the concept of sensors and its characteristics.
<b>ET325.1.2</b>	Describe the working principle of analog and digital sensors.
<b>ET325.1.3</b>	Design sensor interface circuits for a given engineering problem.
<b>ET325.1.4</b>	Interface different sensors with Arduino and Raspberry Pi



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ELECTRONICS & TELECOMMUNICATION ENGINEERING**

<b>NAME OF COURSE:</b>		<b>(Open Elective-II)- Open Source Technologies</b>	
<b>COURSE CODE:</b>	<b>ET325.2</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.AAK</b>

**Course Outcomes:**

<b>ET325.2.1</b>	To work on Open Source Software platforms.
<b>ET325.2.2</b>	To install and work on Linux.
<b>ET325.2.3</b>	To perform Shell Programming.
<b>ET325.2.4</b>	To install and work on Version Control System (GIT)



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>MINI HARDWARE PROJECT</b>	
<b>COURSE CODE:</b>	<b>ET326</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>T.Y. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

**Course Outcomes:**

<b>ET326.1</b>	Produce PCB artwork using an appropriate EDA tool.
<b>ET326.2</b>	Practice good soldering, testing, fault detection and effective trouble-shooting.
<b>ET326.3</b>	Design and implement application based hardware project.
<b>ET326.4</b>	Present technical seminar and display the project

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**SEMESTER-VII**

<b>NAME OF COURSE:</b>		<b>Machine Learning</b>	
<b>COURSE CODE:</b>	<b>ET411</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MSN</b>

**Course Outcomes:**

<b>ET411.1</b>	Describe fundamental aspects of Machine Learning
<b>ET411.2</b>	Distinguish between various characteristics of ML
<b>ET411.3</b>	Explore classification and regression algorithms
<b>ET411.4</b>	Design neural network for classification
<b>ET411.5</b>	Design and implement different Machine Learning models.
<b>ET411.6</b>	Apply Machine learning techniques that enable to solve real world problems.



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Data Communication</b>	
<b>COURSE CODE:</b>	<b>ET412</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MSN</b>

**Course Outcomes:**

<b>ET412.1</b>	Explain Data Communications System and its components.
<b>ET412.2</b>	Develop building skills of subnetting and understand routing mechanisms.
<b>ET412.3</b>	Enumerate the layers of the OSI model and TCP/IP and explain the function(s) of each layer.
<b>ET412.4</b>	Identify the different types of network topologies and protocols.
<b>ET412.5</b>	Acquaintance with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Internet of Thing</b>	
<b>COURSE CODE:</b>	<b>ET413</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VRM</b>

**Course Outcomes:**

<b>ET412.1</b>	Student can elaborate different components of an IoT System.
<b>ET412.2</b>	Student can describe the architecture Cortex M3 series ARM microcontroller/ RaspberryPi.
<b>ET412.3</b>	Student can write interfacing program for different applications with AR Mmicrocontroller.
<b>ET412.4</b>	Student can describe different communication technologies and application protocolsused in IoT
<b>ET412.5</b>	Student can elaborate different cloud platforms of IoT.



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Database Management System</b>	
<b>COURSE CODE:</b>	<b>ET414</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VNJ</b>

### Course Outcomes:

<b>ET412.1</b>	Design ER models to represent simple database application scenarios.
<b>ET412.2</b>	Construct relational tables from ER model, populate relational databases and formulate SQL queries on data.
<b>ET412.3</b>	Analyze & improve the database design by applying normalization.
<b>ET412.4</b>	Describe database storage structures and access techniques.
<b>ET412.5</b>	Elaborate the concept of transaction processing, concurrency control, recovery techniques, Bigdata and NoSQL.



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Elective II - Image &amp; Video Processing</b>	
<b>COURSE CODE:</b>	<b>ET415A</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SSH</b>

**Course Outcomes:**

<b>ET415A.1</b>	Describe and performs basic operations on image and video
<b>ET415A.2</b>	Design and apply filter on images in spatial and frequency domain.
<b>ET415A.3</b>	Analyze and implement algorithm for image and video processing application using modern tools.
<b>ET415A.4</b>	Select and apply appropriate technique for preprocessing, segmentation and feature extraction of images and videos in real time applications.





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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>Elective II - Wireless Sensor Networks</b>	
<b>COURSE CODE:</b>	<b>ET415B</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.SSH</b>

**Course Outcomes:**

<b>ET415B.1</b>	Know Wireless Sensor scenario with its challenges, architecture and protocols.
<b>ET415B.2</b>	Apply their knowledge for the implementation of the Wireless Sensor Network in various applications.

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**DEPARTMENT OF  
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SEMESTER-VIII**

<b>NAME OF COURSE:</b>		<b>Microwave Engineering</b>	
<b>COURSE CODE:</b>	<b>ET421</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MHN</b>

**Course Outcomes:**

<b>ET421.1</b>	Understand the importance of microwave Engineering
<b>ET421.2</b>	Formulate the wave equation in wave guide for analysis.
<b>ET421.3</b>	Understand the working principles of all the microwave tubes and solid state devices
<b>ET421.4</b>	Identify the use of microwave components and devices in microwave applications.
<b>ET421.5</b>	Carry out the microwave network analysis
<b>ET421.6</b>	Choose a suitable microwave measurement instruments and carry out the required measurements



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**DEPARTMENT OF  
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<b>NAME OF COURSE:</b>		<b>CMOS VLSI Design</b>	
<b>COURSE CODE:</b>	<b>ET422</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.MMK</b>

**Course Outcomes:**

<b>ET422.1</b>	Describe MOS transistor theory and mathematical equations for behavior of E-MOSFET
<b>ET422.2</b>	Design combinational logic circuits using E-MOSFETs.
<b>ET422.3</b>	Design sequential logic circuits using E-MOSFETs.
<b>ET422.4</b>	Analyze timing issues in digital circuits

## DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

<b>NAME OF COURSE:</b>		<b>Elective III- Industrial Internet Of Things</b>	
<b>COURSE CODE:</b>	<b>ET423A</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VRM</b>

### Course Outcomes:

<b>ET423A.1</b>	Comprehend different components and technical requirements of an IIoT System.
<b>ET423A.2</b>	Design reference IIoT architecture based solution for the development of IIoT application.
<b>ET423A.3</b>	Select appropriate communication technology and/or protocol for a given application.
<b>ET423A.4</b>	Analyze the security issues associated with identity access component of an IIoT system.
<b>ET423A.5</b>	Implement cloud industrial IoT solutions for a given application.



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### **DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING**

<b>NAME OF COURSE:</b>		<b>Elective III- Artificial Intelligence and Applications</b>	
<b>COURSE CODE:</b>	<b>ET423B</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.VRM</b>

### **Course Outcomes:**

<b>ET423B.1</b>	Understand and able to use problem solving approach using Artificial Intelligence.
<b>ET423B.2</b>	Understand the need of NLP and Probabilistic language models.
<b>ET423B.3</b>	Understand basics of Robotics and apply AI in Robotics.
<b>ET423B.4</b>	Differentiate between Machine Learning and Deep learning as well as apply deep learning for various applications.

## DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

<b>NAME OF COURSE:</b>		<b>Elective IV- Network Security</b>	
<b>COURSE CODE:</b>	<b>ET424A</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Dr.SSS</b>

### Course Outcomes:

<b>ET424A.1</b>	Describe classical encryption techniques and cyber laws within the context of cyber security
<b>ET424A.2</b>	Identify working principles of secret key and public key cryptography.
<b>ET424A.3</b>	Demonstrate Network and Transport layer communication standards/protocols for web security.
<b>ET424A.4</b>	Apply network security principles, authentication mechanism for secure data transmission.
<b>ET424A.5</b>	Select appropriate security services to prevent, detect and/or recover from a security attack.



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<b>NAME OF COURSE:</b>		<b>Elective IV- Data Analytics</b>	
<b>COURSE CODE:</b>	<b>ET424B</b>	<b>ACADEMIC YEAR :</b>	<b>2023-24</b>
<b>CLASS :</b>	<b>B.E. B.Tech</b>	<b>NAME OF SUBJECT TEACHER:</b>	<b>Prof.AAK</b>

### Course Outcomes:

<b>ET424B.1</b>	Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.
<b>ET424B.2</b>	Use the right method to solve real problem.
<b>ET424B.3</b>	Selecting appropriate data visualizations to clearly communicate analytic insights.
<b>ET415A.4</b>	Use the tools and techniques to apply different algorithms and methodologies.