Koneru Lakshmaiah Education Foundation
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B.Tech Electronics and Computer Science

COURSE VS POs & PSOs MAPPING Y22 Admitted Batch

COURSE CODE	COURSE NAME	CO NO	Description of the Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
22UC1101	Integrated Professional English	CO1	Understand the concepts of grammar and to improve communication skills in reading and writing.	-	-	-	-	-	-	-	-	-	1	-	-	-	-
		CO2	Demonstrate the ability in interactive skills of speaking and writing that are better suited for corporate environment.	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO3	Understand various strategies of reading and use them in interpreting the text.	-	-	-	-	-	-	-	-	2	-	-	-	-	-
		CO4	Apply the concepts of writing to draft corporate letters, emails and memos, reports, etc.	-	-	-	-	-	-	-	-	-	2	-	-	-	-
22UC1202	English Proficiency	CO1	Demonstrating different inter personal skills for employability	-	-	-	-	-	-	-	1	-	-	-	-	-	-
		CO2	Distinguishing business essential skills	-	-	-	-	-	-	-	-	2	-	-			-
		CO3	Classifying social media and corporate communication skills	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	Applying analytical thinking skills	-	-	-	-	-	-	-	-	-	-	-	2	-	-
22UC2103	Essential Skills for Employability	CO1	Identify and organize sentence structures based on grammar	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	Illustrate specific writing styles	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO3	Relate intra personal skills	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO4	Interpret inter personal Skills for developing oral communication	-	-	-	-	-	-	-	-	-	-	-	2	-	-
22UC2204	Corporate Readiness Skills	CO1	Extend word power for developing effective speaking and writing skills	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	Differentiate critical and general reading skills	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO3	Interpret inter personal skills	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO4	Demonstrate necessary skills to be employable	-	-	-	-	-	-	-	-	-	-	-	2	-	-
22UC0010	Universal Human Values & Professional Ethics	CO1	Realize and Understand the basic aspiration, harmony in the human being.	-	-	-	-	-	-	-	-	-	-	-		-	-
		CO2	Envisage the roadmap to fulfill the basic aspiration of human beings.	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Analyze the profession and his role in this existence	-	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Understand the profession and his role in this existence	-	-	-	-	1	-	-	-	-	-	-	-	-	-

22UC0007	Indian Heritage and Culture	CO1	Familiarizing students with various aspects of Indian culture and how they contribute to the concept of Unity in Diversity	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO2	Understand the beginnings of Indian History and the developments during the Ancient period	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO3	Understand the developments in India during the Medieval Age along with how they contributed to Indian civilization	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO4	Understand the reasons for colonial rule over India and how independence was achieved from British rule	-	-	-	-	-	1	-	-	-	-	-	-	-	-
22UC0008	Indian Constitution	CO1	To acquire knowledge of the historical developments that culminated in the drafting of the Indian Constitution.	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO2	To understand the basic features of the Indian Constitution.	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO3	To understand the structure of the Federal government as defined by the Indian Constitution.	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO4	To understand the Indian Judicial system and election commission of india	-	-	-	-	-	1	-	-	-	-	-	-	-	-
22UC0009	Ecology & Environment	CO1	Understanding the importance of Environmental education and conservation of natural resources	-	1	1	-	-	-	-	-	-	-	-	-	-	-
		CO2	Understanding the Ecosystems, biodiversity	1	-	1	-	-	-	-	-	-	-	-	-	-	-
		CO3	Understand global Environmental issues, pollution	1	-	1	-	-	-	-	-	-	-	-	-	-	-
		CO4	Understand the knowledge on solid waste management, disaster management and EIA process	1	-	2	-	-	-	-	-	-	-	-	-	-	-
22UC0011	Gender Sensitization	CO1	Develop a better understanding of important issues related to gender in contemporary India	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Sensitize to basic dimensions of the biological, sociological, psychological and legal aspects of gender.	-	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Attain a finer grasp of how gender discrimination works in our society and how to counter it.	-	-	2	-	-	-	-	-	-	-	-	-	-	-
		CO4	Acquire insight into the gendered division of labor and its relation to politics and economics.	-	-	-	1	-	-	-	-	-	-	-	-	-	-
22MT1101	Mathematics for Computing	CO1	Model a system of equations for real world applications in engineering, physical and biological sciences, computer science, finance, economics and solve them through matrix algebra	2	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO2	Model basic and computational techniques on discrete structures like relations, orders, functions & FSM, Lattices, and propositional &predicate logic	2	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO3	Model real world structures and their related applications using advanced discrete structures like graphs and trees.	1	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO4	Model the given Statistical data for real world applications in Engineering science, Economics and Management.	3	-	-	-	-	-	-	-	-	-	-	-		-
		CO5	Demonstrate the Aptitude and Reasoning skills (Tests in skilling hours)	3	-	-	-	-	-	-	-	-	-	-	-	2	-

22MT2102	Mathematics for Engineers	CO1	Apply differential and integral calculus to find maxima & minima of functions, evaluate the integrals and solve the differential equations.	2	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	Demonstrate the Fourier series and Laplace transforms.	2	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO3	Describe probability , Random Variables	1	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO4	Explain complex variables, analytic functions and introduction to stochastic process and Algebraic structures.	2	-	-	-	-	-	-	-	-	-	-	-	2	-
22MT3101	Probability and Statistics	CO1	understand the terminologies of basic probability, two types of random variables and their probability functions	2	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	observe and analyze the behavior of various discrete and continuous probability distributions		1	1	-	-	-	-	-	-	-	-	-	1	-
		CO3	understand the central tendency, correlation and correlation coefficient and also regression	1	1	-	-	-	-	-	-	-	-	-	-	1	-
		CO4	apply the statistics for testing the significance of the given large and small sample data by using t- test, F- test and Chi-square test	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO5	Implement probability and statisics using R language	1	1	-	-	-	-	-	-	-	-	-	-	1	-
22UC1203	Design Thinking and Innovation	CO1	Understand the importance of Design thinking process for contextualized problems	-	1	-	-	2	-	-	-	-	-	-	-	-	1
		CO2	Analyze, define, and ideate for solutions	-	-	1	-	-	-	2	-	-	-	-	-	-	2
		CO3	Develop and test the prototype made	-	-	-	-	1	-	3	-	-	-	-	-	-	2
		CO4	Explore the fundamentals of entrepreneurship skills for transforming the challenge into an opportunity	-	-	-	-	2	-	-	3	-	-	-	-	-	1
22PH1211	Science Elective - 1(SemiConductor Physics)	CO1	Understand semiconductor in terms of its electrical and optical properties	2	2	-	-	-	-	-		-	-	-	-	-	1
		CO2	Understand junction properties of semiconductor device.	1	1	-	-	-	-	-	-	-	-	-	-	-	1
		CO3	Understand the characteristics of devices like BJT, FET		1	1	-	-	-	-	-	-	-	-	-	-	1
		CO4	Understand the applications of photonic devices.		2	2	-	-	-	-	-	-	-	-	-	-	2
22CY1001	Science Elective - 2(Engineering Chemistry)	CO1	Predict potential complications from combining various chemicals or metals in an engineering setting	2	-	2	-	-	-	1	-	-	-	-	-	-	1
		CO2	Discuss fundamental aspects of electrochemistry and materials science relevant to corrosion phenomena	2	-	2					-	-	-	-	-	-	1
		CO3	Examine water quality and select appropriate purification technique for intended problem	1	-	-	-	-	-	1	-	-	-	-	-	-	1
		CO4	Explain the role of chemical kinetics in the formation and destruction of ozone in the atmosphere and predict the connection between molecular behavior and observable physical properties.	2	-	-	-	-	-	2	-	-	-	-	-	-	2
		CO5	An ability to analyze and generate experimental skills	1	-	-	2	-	-	-	-	-	-	-	-	-	1
	kills-I	CO1	Apply the concepts of mathematical principles besides logic and identifying certain basic mathematical formulae to solve these kinds of problems	-	-	-	-	-	-	-	-	-	-	-	1	-	-

22UC3105	Problem Solving Sk	CO2	Formulate the concepts of mathematical principles of equations that contain the data related to real life situations which requires basic logic to analyze	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO3	Solve concepts of Venn diagrams and number patterns and illustrate logic behind connectives, series, and analogies respectively	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	Differentiate assumptions and arguments in critical reasoning	-	-	-	-	-	-	-	-	-	-	-	2	-	-
22UC3206	Problem Solving Skills-II	CO1	Implement problem solving ability through analyzing the given data and formulate solutions for real world problems based on time, travel and wages	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	Determine the fundamental concepts of areas, volumes and derive solutions using simple mathematical principles besides interpreting the data through smart tricks to check the number analytics	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO3	Estimate inductive reasoning, to categorize the rules-set from a given list of observations and relate them to predict the conclusions according to the given conditions	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	Integrate verbal and non-verbal reasoning and to identify the logic behind the given arrangement based on the given conditions to bring out the possible outcome	-	-	-	-	-	-	-	-	-	-	-	1	-	-
22SC1101	Computational Thinking for Structured Design	CO1	Design Basic and Complex Building Blocks for real world problems using structured programming paradigm	1	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Translate computational thinking into Logic Design for Solving real world	1	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Apply and Analyse CRUD operations on Basic Data Structures using Asymptotic Notations	1	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Apply and Analyse CRUD operations on Linear Data Structures using Asymptotic Notations.	1	2	-	2	-	-	-	-	-	-	-	-	-	-
		CO5	Apply the structured programming paradigm with logic building skills on Basic and Linear Data Structures for solving real world problems	1	2	-	2	-	-	-	-	-	-	-	-	-	-
		CO6	Skill the students in such a way that students will be able to develop logic that help them to create programs as well as applications in C	1	2	-	2	-	-	-	-	-	-	-	-	-	-
22IEC1101	Logic & Processors	CO 1	Understand numerical and character representations in digital logic, number system, data codes and the corresponding 8design of arithmetic circuitry. Understanding Logic gates, Logic theorems, Boolean algebra and SOP/POS'S expressions.	1	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO 2	Combinational systems design using standard gates and minimization methods	1	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO 3	Sequential systems: Design of counters using flip flops.	1	-	-	-	-	-	-	-	-	-	-	-	-	1

	Digital	CO 4	Understanding PLA's, PAL's, FPGA's, and processors	-	2	-	-	-	-	-	-	-	-	-	-	-	1
		CO5	Analysing and realization of Boolean functions, half adder, encoders, decoders, flip flops, and counters.	-	-	-	-	3	-	-	-	-	-	-	-	-	2
22ME1103	Design Tools Workshop	CO 1	Practice design thinking by developing artistic skills, Visualize and complete his/her innovative design by final drafting using 3D modeling	-	-	1	-	-	-	-	-	-	-	-	-	-	-
		CO 2	Understand the concept of web page, web browser, web server, and able to create Static webpages	-	-	-	-	1	-	-	-	-	-	-	-	-	-
		CO 3	Understand the concept of report writing using a markup language Latex	-	-	-	-	2	-	-	-	-	-	-	-	-	-
		CO 4	Understand the concept of data visualization and creating data visualization dashboards, Understand the basic concept of VR/AR	-	-	-	-	1	-	-	-	-	-	-	-	-	-
22SC1209	IOT Workshop	CO1	Practice the design ideology by 3D printing, 3D scanning techniques	-	-	1	-	-	-	-	-	-	-	-	-	-	-
		CO2	Visualize the design ideology by incorporating VR technique and VR technology, Visualize and present his design idea by applying AR technique and Hologram	-	-	1	-	-	-	-	-	-	-	-	-	-	-
		CO3	Practice of PCB technology	-	-		2	-	-	-	-	-	-	-	-	-	-
		CO4	Practice of Arduino based skill with different interfaces	-	-		2	-	-	-	-	-	-	-	-	-	-
22SC1210	Data Structures	CO1	Understand various sorting algorithms and analyze the efficiency of the algorithms	2	-	2		-	-	-	-	-	-	-	-	2	-
		CO2	Implement Linear Data Structures and Demonstrate their applications.	-	-	-	2	2	-	-	-	-	-	-	-	2	-
		CO3	Understand hashing techniques and Implement tree data structures.	-	-	-	2	2	-	-	-	-	-	-	-	1	-
		CO4	Understand graph data structures and apply graphs to solve problems	-	-	-	2	2	-	-	-	-	-	-	-	1	-
		COS	Develop and evaluate common practical applications for linear and nonlinear data structures.	-	-	-	-	-	-	-	-	-	-	2	-	1	-
22EC1202	Computer Organization & Architecture	CO1	Understand the functionality of CPU functional units - control unit, registers, the arithmetic and logic unit, instruction execution unit	1	-	-	-	1	-	-	-	-	-	-	-	-	1
		CO2	Understand the concepts of CPU and the operation of main, cache and virtual memory organizations	1	-	-	-	2	-	-	-	-	-	-	-	-	1
		CO3	Understand the concepts of the different types of I/O modules and I/O transfer techniques in computer modules	1	-	-	-	2	-	-	-	-	-	-	-	-	2
		CO4	Apply the concept of pipelining in instruction execution and design issues of RISC, CISC and parallel computing architectures	1	-	-	-	1	-	-	-	-	-	-	-	-	2
22EL2102	Object Oriented Programming through Java	CO1	Understand basic Concepts of OOP, and apply the concepts of classes and objects through Java	3	3	-	-	2	-	-	-	-	-	-	-	-	-
		CO2	Apply access control, Inheritance, Packages.	3	3	-	-	3	-	-	-	-	-	-	-	2	-
		CO3	Apply Interfaces, Exception Handling, multi- threading, I/o.		3	-	-	2	-	-	-	-	-	-	-	2	-
		CO4	Apply collection framework and event driven programming.	3	3	-	-	3	-	-	-	-	-	-	-	2	-
		CO5	Apply object-oriented programming concepts to write programs and Analyses requirements and design to implement lab-based project with SDLC in a group of students.		3	-	-	3	-	-	-	-	-	-	-	2	-

22EC1203	Design of Basic Electronic Circuits	CO1	Understand the basic electronic components.	1		-	-	2	-	-	-	-	-	-	-	1	-
		CO2	Understand the basic circuit analysis techniques	1		-	-	2	-	-	-	-	-	-	-	1	-
		CO3	Understand the active circuit elements and working.	1		-	-	2	-	-	-	-	-	-	-	1	-
		CO4	Analyse the applications of semiconductor devices	1		-	-	2	-	-	-	-	-	-	-	1	-
22EC2104	Electronic Devices & Circuit Design	CO1	Understand the BJT operations and a circuit function.	1	-	-	1	-	-	-	-	-	-	-	-	1	-
		CO2	Understand the FET operations and circuit functions	1	-	-	1	-	-	-	-	-	-	-	-	1	-
		CO3	Understand the Op.-Amp operations and circuit functions	2	-	-	2	-	-	-	-	-	-	-	-	2	-
		CO4	Understand the Op-Amp filters and Oscillator circuit functions	2	-	-	2	-	-	-	-	-	-	-	-	2	-
22EL3201	Signal Analysis and Communication Systems	CO1	Understand basic concepts related to Signal Processing System	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO2	Ability to Analyze the Signal Processing Algorithms	-	-	-	-	-		-	-	-	-	-	1	-	-
		CO3	Ability to Analyze the Filter design Methodologies	-	-	-	-	-	1	-	-	-	-	-	-	-	-
		CO4	Ability to Analyze Signal Processing algorithms in different case studies	-	-	-	-	-	1	-	-	-	-	-	-	-	-
22EL2101	Operating Systems	CO1	Understand the OS structure and its functions. Articulate design trade-offs inherent in OS design.	-	-	-	2	-	-	-	-	-	-	-	-	2	-
		CO2	understanding of the role of process concepts on scheduling, scheduling algorithms, inter-process communication and system calls.	-	-	-	1	-	-	-	-	-	-	-	-	1	-
		CO3	Understand the concept of memory virtualization, page replacement algorithms, and deadlock	-	-	-	2	-	-	-	-	-	-	-	-	2	-
		CO4	Understand file system Implementation	-	-	-	1	-	-	-	-	-	-	-	-	1	-
		CO5	Develop application programs using different platforms and languages.	-	-	-	-	1	-	-	-	-	-	-	-	3	-
22EL2202	Embedded Systems Design	CO1	Understand the architecture and programming concepts of 8086 Microprocessor	-	-	-	-	2	-	-	-	-	-	-	-	2	-
		CO2	Apply the Programming concepts of 8051 Microcontroller	-	-	-	-	2	-	-	-	-	-	-	-	2	-
		CO3	Analyse the Interfacing of Peripherals to the 8051 microcontrollers through programming. Understand the basic architectures of PIC and ARM 7 microcontrollers	-	-	-	-	1	-	-	-	-	-	-	-	2	-
		CO4	Understand the basic concepts of CORTEX STM-32 microcontroller and RTOS	-	-	-	-	2	-	-	-	-	-	-	-	3	-
		CO5	Analyze the applications of programming with 8051 and 8086 on hardware / software. Analyze the applications of programming with Arduino	-	-	-	-	3	-	-	-	-	-	-	-	3	-
22EL2203	e Management Systems	CO1	Illustrate the functional components of DBMS and Design an ER Model for a database.	-	-	-	-	2	-	-	-	-	-	-	-	2	-
		CO2	Design a relational model for a database & Implement SQL concepts and relational algebra.	-	-	-	-	1	-	-	-	-	-	-	-	1	-
		CO3	Implement PL/SQL programs, normalization techniques, indexing to construct and access database	-	1	-	-	2	-	-	-	-	-	-	-	2	-
		CO4	Analyze the importance of transaction Processing, concurrency control and recovery techniques.	-	1	-	-	2	-	-	-	-	-	-	-	2	-

	Databas	CO5	Design a database and implement SQL queries and PL/SQL programs to do various operations on data.	-		-	-		-	-	-	-	-	-	-	2	-
		CO6	Design and query database using database programming skills	-	2	-	-	2	-	-	-	-	-	-	-	2	-
22EL3101	VLSI Design	CO1	Understand the MOS theory and processing technology	1	-	-	2		-	-	-	-	-	-	-	1	-
		CO2	Understand the MOS circuit characterization and performance estimation	1	-	-	2		-	-	-	-	-	-	-	1	-
		CO3	Understand the combinational circuit design	1	-	-	2	1	-	-	-	-	-	-	-	1	-
		CO4	Understand the sequential circuit design	1	-	-	2	1	-	-	-	-	-	-	-	1	-
22EL2104	Web application Development	CO1	Create Static Web pages using basic HTML &apply CSS	-	1	-	-	2	-	-	-	-	-	-	-	2	-
		CO2	Apply JavaScript features for form validations and event handling	-	1	-	-	1	-	-	-	-	-	-	-	2	-
		CO3	Create databases using MYSQL and apply JDBC concepts to connect to a database	-	3	-	-	2	-	-	-	-	-	-	-		2
		CO4	Create dynamic web pages using servlets & JSP	-	2	-	-	3	-	-	-	-	-	-	-		3
		CO5	Design WEB pages considering the user interface, navigation, and interaction with the database	-	2	-	-	2	-	-	-	-	-	-	-		2
		CO6	Create Web Applications for real-time problems by providing UI and database accessibility.	-	2	-	-	2	-	-	-	-	-	-	-		2
22EL3102	Data Science	CO1	Understand Data Science, Exploratory Data Analysis, Data Extraction, Wrangling, Examine the inference from Exploratory data analysis (EDA)	1	-	1	-	2	-	-	-	-	-	-	-	2	-
		CO2	Demonstrate by organizing, comparing visualization and simple metrics	-	-	1	-	1	-	-	-	-	-	-	-	1	-
		CO3	Demonstrate by organizing comparing visualization and simple metrics	-	-	1	2	-	-	-	-	-	-	-	-	2	-
		CO4	Applying Variance, covariance, and correlation on Data Science	-	-	1	2		-	-	-	-	-	-	-	2	-
		CO5	Implementing Inferential Statistical Analysis	-	-	-	-	2	-	-	-	-	-	-	-	1	-
		CO6	Design & Development of various AI & ML Algorithms on Real-Time Applications	-	-	-	-	1	-	-	-	-	-	-	-	2	-
22EL3103	Software Engineering	CO1	Develop application programs using different platforms and languages.	2	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO2	Apply Requirement modelling and design issues that are used in software development	-	1	-	-	-	-	-	-	-	-	-	-	-	2
		CO3	Analyze dynamic modelling issues which are used in software development	2	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO4	Analyze various testing and CMMI techniques	1	-	-	-	-	-	-	-	-	-	-	-	-	2
22EL3104	Artificial Intelligence	CO1	Understand the problem, well defined problems and their solutions, Uninformed and Informed search.	2	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO2	Game playing with adversarial search. Constraint satisfaction problems	-	1	-	-		-	-	-	-	-	-	-	1	-
		CO3	Building Knowledge and reasoning: - propositional logics, first order logic, forward and backward reasoning, resolution.	-	1	-	-	-	-	-	-	-	-	-	-	1	-
		CO4	Analyzing uncertainty using Bayes theorem, Hidden Markov model and Kalman filters.	-		-	-	-	-	-	-	-	-	-	-		-
		CO5	Solving AI problems.	-	2	-	-		-	-	-	-	-	-	-	2	-

22EL3202	Machine Learning	CO1	Understand Machine learning and apply decision tree model for a real-world problem	2	-	-	-		-	-	-	-	-	-	-	-	1
		CO2	Distinguish linear regression and logistic regression and identify best regression coefficients	-	1	-	-	-	-	-	-	-	-	-	-	-	2
		CO3	Analyze Bayesian model sand genetic programming model	-	1	-	-	-	-	-	-	-	-	-	-	-	1
		CO4	Interpret the neural network learning and evaluate the model	-		-	-	-	-	-	-	-	-	-	-	-	
		CO5	Implement Machine Leaning models , evaluate and interpret the result	-	1	-	-	-	-	-	-	-	-	-	-	-	1
22EC2210	Data Networks & Protocols	CO1	Introduction to Computer networks and Data Link Layer	1	1	-	-	-	-	-	-	-	-	-	-	1	-
		CO2	Network layer and Internetworking	1	2			2	-	-	-	-	-	-	-	2	-
		CO3	Transport layer, Session Layer, Presentation Layer and Application Layer	1	2	-	-	2	-	-	-	-	-	-	-	2	-
		CO4	Advanced Topics: Cryptography, Advancements in Application layer, Wireless LANs, Network Security	1	1	-	-		-	-	-	-	-	-	-	1	-
22EL3204	Deep Learning	CO1	Able to understand and remember the concepts of Perception, Back Propagation, PCA, Singular Value Decomposition	2		-	-	-	-	-	-	-	-	-	-	-	2
		CO2	Able to understand auto encoders- and apply Regularization, Denoising, Sparse, Contractive, Vectoral Representations of words Convolutional Neural Networks, LeNet, , VGGNet, GoogleNet, ResNet, Fast RCNN, Faster RCNN, YOLO	-	2	-	-	-	-	-	-	-	-	-	-	-	1
		CO3	Apply Long Short-Term Memory (LSTM) Restricted Boltzmann Machines, Deep Dream, GRU, Neural style transfer, Deep learning for computer vision, text and sequences.	-	2	-	-	-	-	-	-	-	-	-	-	-	1
		CO4	Build Markov models, Markov networks, Markov chains, Variational autoencoders, Autoregressive Models: NADE, MADE, PixelRNN, Generative Adversarial Networks (GANs), how to train DCGAN, limitations of deep learning	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		CO5	Implement basic Neural Networks, optimization algorithms, engine vector decomposition, various types of auto encoders, batch normalization, convolutional neural networks	-	2	-	-	-	-	-	-	-	-	-	-	-	2
22EL3104	Web Programming using Python and Django	CO1	Understanding the fundamental concepts like Flow control and conditions, File handling, OOPs and Python modules. Understand Django Template System	-	-	-	-	2	-	-	-	-	-	-	-	-	1
		CO2	Understand how to use models to store the data with admin.	-	-	-	-	3	-	-	-	-	-	-	-	-	1
		CO3	Analyze Django Forms, creating view CBV in various applications	-	1	-	-	2	-	-	-	-	-	-	-	-	2
		CO4	Analyze Django serialization to handle session with middleware.	-	1	-	-	2	-	-	-	-	-	-	-	-	1
		CO5	Evaluate various applications and deployment of application with Django	-	-	-	-	3	-	-	-	-	-	-	-	-	1
22EL3205	ud Computing for web Engineer	CO 1	understand cloud computing services and models	-	-	-	-	2	-	-	-	-	-	-	-	-	2
		CO 2	understand cloud computing virtualization concepts	-	-	-	-	1		-							1
		CO 3	Apply cloud services using amazon web services (AWS) Cloud to utilize cloud resources.	-	-	-	-	-	2	-	-	-	-	-	-	-	2
		CO 4	Apply the techniques how to create and deploy web applications using amazon web services (AWS) Cloud	-	-	-	-	2	-	-	-	-	-	-	-	-	2

	Clou	CO 5	Analyze various cloud services in amazon web services (AWS) and create each service.	-	2	-	-	-	-	-	-	-	-	-	-	-	2
22EL3206	Big data Analytics for Web Engineer	CO 1	Ability to find and transmit data emanated from different embedded and IoT devices	-	-	-	-	2	-	-	-	-	-	-	-	-	2
		CO 2	Ability to use HADOOP and MAP reduce tools in the process of undertaking Analytics	-	-	-	-	2	-	-	-	-	-	-	-	-	1
		CO 3	Ability to develop data Modelling, Structuring, and Analytics using "R" Language	-	-	-	-	2	-	-	-	-	-	-	-	-	2
		CO 4	Ability to conduct various kinds of analytics on big data especially using text	-	-	-	-	2	-	-	-	-	-	-	-	-	2
22EL3207	Essentials of Block Chain Technology	CO 1	Understand the types, benefits, and limitations of blockchain.	-	-	-	-	1	-	-	-	-	-	-	-	-	1
		CO 2	Explore the blockchain decentralization and cryptography concepts	-	-	-	-	2	-	-	-	-	-	-	-	-	2
		CO 3	Enumerate the Bitcoin features and their alternative options	-	-	-	-	1	-	-	-	-	-	-	-	-	1
		CO 4	Apply the smart contracts on the Ethereum Platform	-	-	-	-	2	-	-	-	-	-	-	-	-	1
		CO 5	Analyse DApps on different frame works	-	-	-	-		-	-	-	-	-	-	-	-	1
22EL3208	Robotic Process Automation	CO 1	Understand the RPA Foundations and RPA Skills.	2	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO 2	Understand the Process Methodologies and Requirements for RPA Environment Planning.	1	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO 3	Understand the Process and Methodology of BOT Development.	1	1	2	-	-	-	-	-	-	-	-	-	-	1
		CO 4	Understand the Deployment, Monitoring and Data Preparation Methodologies	-	-	2	2	-	-	-	-	-	-	-	-	-	1
		CO 5	Implementation of BOT Development Process and Verification using the RPA Tools [UI Path].	1	1	2	1	-	-	-	-	-	-	-	-	-	2
22EL3214	Ethical hacking for web engineers	CO 1	Understand fundamentals of ethical hakinng	-	-	-	2	-	-	-	-	-	-	-	-	2	-
		CO 2	Understand Vulnerability scanning using NMAP and Nessus	-	-	-	2	-	-	-	-	-	-	-	-	2	-
		CO 3	Understand cryptography, private-key encryption, public-key encryption	-	-	-	2	-	-	-	-	-	-	-	-	3	-
		CO 4	Understand Steganography, biometric authentication, network-based attacks, DNS and Email security	-	-	-	2	-	-		-	-	-	-	-	1	-
		CO 5	Analyze Different types of attacks using Metasploit framework	-	-	-		3		-	-	-	-	-	-	3	-
22EL3211	Hardware software co design	CO1	Understand various Hardware/Software Co-Design, models	1	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO2	Understand different methodologies involved in Hardware/Software Co-Design	-	2	-	-	-	-	-	-	-	-	-	-	1	-
		CO3	Understand various interfacing techniques involved in Hardware/Software Co-Design.	-	1	-	-	-	-	-	-	-	-	-	-	2	-
		CO4	Understand various target architectures involved in Hardware/Software Co-Design.	-	2	-	-	-	-	-	-	-	-	-	-	1	-
		CO5	Analyze the High-Level synthesis model and RTL optimization	-	1	-	-	-	-	-	-	-	-	-	-	1	-
EL3203	d Real Time ing System	CO1	Current Trends for Embedded Systems	-	-	-	-	-	-	-	-	-	1	-	-	2	-
		CO2	Challenges in validating timing constraints in priority –driven systems Off-line versus On-line Scheduling	-	-	-	-	-	-	-	-	2		-	-	2	-
		CO3	Pros and Cons of Clock Driven Scheduling.	-	-	-	-	-	-	-	-	2		-	-	2	-

22I	Embedde Operat	CO4	Deferrable Servers	-	-	-	-	-	-	-	-	-	2	-	-	1	-
		CO5	Real-Time Operating Systems Other Basic Operating System Functions	-	-	-	-	-	-	-	-	-	2	-	-	1	-
22EL3204	Networking of Embedded Systems	CO1	Understand concepts of serial communication protocols RS232, RS485, SPI	-	2	-	-	1	-	-	-	-	-	-	-	-	1
		CO2	Apply concepts of I2C and USB communication to develop the application	-	1	-	-	2	-	-	-	-	-	-	-	-	2
		CO3	Apply concepts of CAN bus and develop an application	-	1	-	-	2	-	-	-	-	-	-	-	-	2
		CO4	Apply concepts of Ethernet and Wireless network and develop an application	-	2	-	-	3	-	-	-	-	-	-	-	-	1
		CO5	Analyze embedded system protocols and develop applications	-	2	-	-	2	-	-	-	-	-	-	-	-	2
22EL4103	Sensors and Actuators in embedded systems	CO1	Understand the role of sensors and actuators in real-time aspects and Electrostatic transducers.	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	Understand the role of Magnetic, Piezoelectric, Resistive and Optical Transducers.	2	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO3	Apply the role of biosensors and Data Acquisition Systems.	1	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO4	Analyze the role of different Energy sources and power management in IoT	2	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO5	Implement and Evaluate the Practical -IoT	3	-	-	-	-	-	-	-	-	-	-	-	3	-
22EL4104	System on Chip	CO1	Able to understand the system architecture concepts	1	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO2	Able to understand the requirements for processor selection strategies.	-	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO3	Able to understand the requirements for memory selection strategies for SoC development.	-	1	-	-	-	-	-	-	-	-	-	-	1	-
		CO4	Able to understand the bus architectures and interconnect architectures and analyze the different case studies	-	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO5	Able to understand the System Architecture Implementation & Verification	1	2	-	-	-	-	-	-	-	-	-	-	2	-
22EL3213	Embedded Security	CO1	understand security trends and policies	1	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	understand embedded operating system security techniques	-	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO3	understand and describe software security developments and upgrades.	-	2	-	-	-	-	-	-	-	-	-	-	1	-
		CO4	understand cryptography techniques	-		-	-	-	-	-	-	-	-	-	-	1	-
		CO5	Demonstration of experiments on crypto algorithms and cryptanalysis in Embedded Systems.	-	1	-	-	-	-	-	-	-	-	-	-	2	-
22EL3106	Fundamentals of IoT	CO1	Understand functional blocks and functioning of IoT devices	-	-	-	-	-	-	2	-	-	-	-	-	1	-
		CO2	Understand Communication models that are used for the development of the IoT based Systems	-	-	-	-	3	-	-	-	-	-	-	-	-	-
		CO3	Understand different networking topologies and protocols used for the development of IoT based Networks	-	-	-	-	-	-	3	-	-	-	-	-	1	-
		CO4	IoT Application Case studies	-	-	-	-	-	-	1	-	-	-	-	-	2	-
	nd	CO1	To Understand the Architectural Overview of IoT	-	-	-	-	-	-	2	-	-	-	-	-	1	-

22EL3107	Internet of Things : Architectures a Prorocols	CO2	To Understand the IoT Reference Architecture and Real World Design Constraints	-	-	-	-	-	-	1	-	-	-	-	-	1	-
		CO3	To Apply the various IoT Protocols in Datalink and Network layers	-	-	-	-	-	-	2	-	-	-	-	-	1	-
		CO4	To Apply the various IoT Protocols in Transport and Session Layers	-	-	-	-	-	-	2	-	-	-	-	-	1	-
22EL3108	IoT Sensing and Actuating Devices	CO1	Understand the role of sensors and actuators in real-time aspects and Electrostatic transducers.	-	2	-	-	1	-	-	-	-	-	-	-	2	-
		CO2	Understand the role of Magnetic, Piezoelectric, Resistive and Optical Transducers.	-	2	-	-		1	-	-	-	-	-	-	2	-
		CO3	Apply the role of biosensors and Data Acquisition Systems.	-	1	-	-	-		2	-	-	-	-	-	1	-
		CO4	Analyze the role of different Energy sources and power management in IoT	-	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO5	Implement and Evaluate the Practical -IoT	-	1	-	-	-	-	-	1	-	-	-	-	1	-
22EL3209	wireless sensor networks	CO1	Understand the concepts of Wireless sensor networks, challenges, and limitations of wireless sensor networks	-	-	-	-	2	-	-	-	-	-	-	-	1	-
		CO2	Understand the MAC layer protocol for energy-efficient design of WSN	-	-	-	-	-	-	3	-	-	-	-	-	2	-
		CO3	Analyze the data dissemination and gateway concepts in WSN	-	-	-	2	-	-		-	-	-	-	-	1	-
		CO4	Understanding the concept of time synchronization, Localization, and positioning in WSN	-	-	-	-	-	-	1	-	-	-	-	-	2	-
		CO5	Development of different applications using WSN concepts	-	-	-		2	-	-	-	-	-	-	-	2	-
22EL3210	Cloud computing for IoT	CO1	To understand the differences between traditional deployment and cloud computing	-	-	-	-	-	-	2	-	-	-	-	-	1	-
		CO2	Understand different cloud infrastructures and service models and virtualization	-	-	-	-	-	-		2	-	-	-	-	1	-
		CO3	Apply the concept of Data Analytics by using AWS cloud	-	-	-	-	-	-	2		-	-	-	-	2	-
		CO4	Analyze the statistical data analysis and methods for evaluation	-	-	-	-	-	-		2	-	-	-	-	2	-
22EL3212	IoT Application Development	CO1	Ability describe the Raspberry PI board architecture and components	-	-	-	-	-	-	1	-	-	-	-	-	-	1
		CO2	Ability to design IOT based Applications	-	-	-	-	-	-	1		-	-	-	-	-	2
		CO3	Ability to develop IOT applications using Python	-			-	-	-	2		-	-	-	-	-	1
		CO4	Ability setup environment required for developing applications using Python and Raspberry PI board	-	-	-	-	-	-	-	2	-	-	-	-	-	1

NoTe: (3)H – High Correlation, M (2)– Medium Correlation, L(1) – Low Correlation