Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' Grade University ❖Approved by AICTE ❖ ISO 9001-2015 Certified
Campus: Green Fields, Vaddeswaram - 522 502, Guntur District, Andhra Pradesh, INDIA.
Phone No. 0863 - 2399999; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 -2577715, Fax: +91-866-2577717.

B.Tech Electronics and Computer Engineering

COURSE VS POs & PSOs MAPPING Y17 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
17MT1101	Single variable calculus and matrix algebra	CO1	Understand the basic Structures , relations and permutations & combinations , probability	2													
		CO2	Model and solve the relevant physical problems mathematically as a system of linear equations .	2													
		CO3	Apply the rules of Propositional logic to establish valid resultsof mathematical arguments, Induction and solve recurrence relations .	2													
		CO4	understand the graphs and analyze different problems associated with computer , logic design.	2													
		CO5	Describe the Aptitude & Reasoning skills	2													
17CS1101	PROBLEM SOLVING AND COMPUTER PROGRAMMING	CO1	Illustrate how problems are solved using computers and programming.	2	2										2		
		CO2	Illustrate and use Control Flow Statements in C.	2	2										2		
		CO3	Interpret & Illustrate user defined C functions and different operations on list of data.	2	2												
		CO4	Implement Linear Data Structures and compare them.				3										
		CO5	Apply the knowledge obtained by the course to solve real world problems.	2	2		2										
17ME1002	Engineering Graphics	CO1	Practice design thinking by developing artistic skills			2											
		CO2	Visualize and practice innovative design by final drafting using photogrammetric and model the design using prototyping technique				3										
		CO3	Apply the concept of AI & Data analytics & finalize the requirements to design his idea					3									

		CO4	Draft a report of his project from the initial stage & make a report which include scope, time and cost management of his project				3										
17GN1204	Coding Skills for Engineers	CO1	Apply the concepts of basic programming to solve the basic problems, pattern based problems	3	3											3	
		CO2	Build solutions for problems on Numbers and array based	3	3											3	
		CO3	Solve problems solutions for character/string based problems and pointers	3	3											3	
		CO4	Build solutions to programs on Data structures concepts.	3	3											3	
17MT1102	Foundations of Computational Mathematics	CO1	Apply differential and integral calculus to find maxima & minima of functions and evaluate the integrals	2													
		CO2	Model and solve the relevant phenomena as a differential equation.	3													
		CO3	Demonstrate Fourier series and Analytic functions	2													
		CO4	Describe probability , Random Variables and Algebraic structures	2													
17CS2004	OBJECT ORIENTED PROGRAMMING	CO1	Understand basic Concepts of OOP, fundamentals of java and apply the concepts of classes and objects through java			3		3									3
		CO2	Apply access control, Inheritance, Packages.			3		3									3
		CO3	Apply Interfaces, Exception Handling, multi-threading, I/o.			3		3									3
		CO4	Apply collection framework and event driven programming.			3		3									3
		CO5	Apply object-oriented programming concepts to write programs and analyses requiremens and design to implement lab-based project with SDLC in students							4		4	4				4
		CO1	Apply measures of efficiency on algorithms and Analyse different Sorting Algorithms.	4	4											4	4
		CO2	Analyse and compare stack ADT and queue ADT implementations using linked list and applications.	4			4									4	4

17CS1102	DATA STRUCTURES	CO3	Analyse the linked implementation of Binary, Balanced Trees and different Hashing techniques.	4			4									4	4
		CO4	Analyse different representations, traversals, applications of Graphs and Heap organization.		4		4									4	4
		CO5	Develop and Evaluate common practical applications for linear and non-linear data structures.	5	5											5	5
17EC2204	COMPUTER ORGANIZATION & ARCHITECTURE	CO1	Understanding of computer system and its modules				1									1	
		CO2	Understanding the CPU Design				2									2	
		CO3	Applications of Input/Output Devices				3									3	
		CO4	Applications of RISC and CISC paradigm				4									4	
17CY1001	Engineering Chemistry	CO1	Predict potential complications from combining various chemicals or metals in an engineering setting	3	3											3	
		CO2	Discuss fundamental aspects of electrochemistry and materials science relevant to corrosion phenomena	3	3											3	
		CO3	Examine water quality and select appropriate purification technique for intended problem	3	3	4										3	
		CO4	Apply polymers, conducting polymers ,green chemistry and nano chemistry to engineering processes	3	4											3	
17ME1003	Workshop Practice	CO1	Practice the design ideology by artistic skill			2											
		CO2	Visualize the design ideology by using VR technology				3										
		CO3	Visualize the design ideology by incorporating VR technique					3									
		CO4	Visualize and present his design idea by applying AR technique				3										
17CS2102	OPERATING SYSTEMS	CO1	Understanding the basic algorithms for subsystem components				2									2	
		CO2	Understand memory and process virtualization				2									2	
		CO3	Design and solve synchronization problems, and multi-threading llibraries				3									3	
		CO4	Understand persistence concepts				2									2	
		CO5	Develop application programs using different platforms and languages					5									5

17CS2107	SOFTWARE ENGINEERING	CO1	Understand the software development life cycle and associated process models and reverse engineering	2	2												
		CO2	Illustrate Requirement modelling and Agile and Extreme programming		3	3											
		CO3	Examine Agile Models such as Scrum, Kanban and SAFe methodology	4	4												
		CO4	Categorize various testing strategies, Test Driven Development and CMMI,SIX SIGMA TECHNIQUES	4	4												
17EM2102	Electronic Devices and Circuits	CO1	Analyze the concepts of various diodes and their applications.	1		1											2
		CO2	Analyze BJT concepts as operation, biasing and frequency response	2		2											2
		CO3	Analyze FET concepts as operation, biasing and frequency response	2		2											4
		CO4	Analyze the usage of Power Amplifiers	1		1											3
		CO5	Develop applications involving the usage of Diodes,BJT,FET and power amplifiers					3		6							6
17EM2102	Processors and Controllers	CO1	Understand the architecture and programming concepts of 8086 Microprocessor	2	2												
		CO2	Apply the Programming concepts of 8051 Microcontroller	3	3												
		CO3	Analyse the Interfacing of Peripherals to the 8051 microcontrollers through programming. Understand the basic architectures of PIC and ARM 7 microcontrollers		4	4											
		CO4	Understand the basic concepts of CORTEX STM-32 microcontroller and RTOS		2	2											
		CO5	Analyze the applications of programming with 8051 and 8086 on hardware / software. Analyze the applications of programming with Arduino		4	4											
		CO1	Must acquire basic knowledge about embedded systems, hardware devices used and the general discussion about at mega Controller.	1		1											
		CO2	Must be able to use IDE and Free RTOS to develop firmware using embedded C	2		2											

17TS503	Skilling for Engineers - 5 (Embedded C)	CO3	Must be able to develop small applications for reading input from the sensors and writing output to the actuators			2		2									
		CO4	Understand the purpose and basic functioning of RTOS and be able to implement sample applications through use of RTOS functions			5		4									
		CO5	Able to develop a prototype for a real time embedded application using project-based labs.			6		6									
17EM2204	Computer Networks and Security	CO1	Understand OSI and TCP/IP models	1												1	
		CO2	Illustrate the Link, MAC and Network layer concepts.	2		2										2	
		CO3	Illustrate Transport and Application layer concepts	2		2											2
		CO4	Understand and Apply Network Security Techniques.		3		3										3
17ME1001	Engineering Mechanics	CO1	Apply the concept of forces, governing static equations and analyze planer system of forces. Apply different analytical methods on spatial system of forces and analyzing them	1	2			3									
		CO2	Understanding the concepts of planar and non-planar system of parallel forces and analyzing them. estimate moment of inertia of lamina and material bodies		2			2									
		CO3	Analyzing the rigid bodies under translation and rotation with and without considering forces.		2			2									
		CO4	Understanding the engineering mechanics physical systems prepare and demonstrate the models with the help of mechanics concepts to solve the engineering problems		2			2									
		CO5	Apply the concepts of mechanics and carryout different experiments and analyze the results		3			4									
	DATABASE	CO 1	Illustrate the functional components of DBMS, importance of data modelling in design of a database.			2											
		CO 2	Build queries using SQL and concepts of PL/SQL			3											

17CS2210	MANAGEMENT SYSTEMS	CO 3	Apply normalization techniques and indexing to construct and access decent database.				3										
		CO 4	Identify the importance of transaction processing, concurrency control and recovery														
		CO 5	Develop a good database and define SQL queries for data analysis										4				
17CS2212	ARTIFICAL INTELLIGENCE	CO 1	Introduction to AI, Understand about intelligence, knowledge and Artificial Intelligence, techniques of AI as a State space search, Production Systems.	2		2											
		CO 2	Problem solving by Search, Heuristic Search, Randomized search techniques and Finding Optimal paths		2			2									
		CO 3	Analyze the appropriate methodologies for problem decompositions, planning and constraint data	3				3									
		CO 4	Understand Knowledge Representation using Predicate Logic, Representing Knowledge using Rules, Semantics Nets, Frames and Conceptual	2	2												
17EM2206	WEB APPLICATION DEVELOPMENT	CO1	Able to create Static Web pages using basic HTML &apply CSS		6			6									6
		CO2	Able to apply JavaScript features for form validations and event handling		3			3									3
		CO3	Able to create databases using MYSQL and apply JDBC concepts to connect to a database.		6			6									6
		CO4	Able to create dynamic web pages using servlets & JSP		6			6									
		CO5	Must be able to design WEB site considering the user interface, navigation and interaction with the database using project-based LABS		6			6									6
17TS502	Sklling for Engineers 4 (Python Programming)	CO1	Design and Develop applications using python control statements and arrays and strings	2		2							4				2
		CO2	Develop applications using python functions, lists dictionaries				2	2					6				2
		CO3	Develop applications using pythons oops concepts				4	4					6				4
		CO4	Develop applications using database connectivity with python				4	4					6				4
		CO1	Understand the Basic fundamentals of a measurement system.		2	2											2

17GN1003	Basic Engineering Measurements	CO2	Understand various Mechanical measuring parameters, and apply different measuring techniques on various mechanical parameters using simulation and experimentation tools.		3	3											2
		CO3	Understand various Electrical measuring parameters, and apply different measuring techniques on various Electrical parameters using simulation and experimentation tools.		3	3											2
		CO4	Understand various Electronic measuring parameters, and apply different measuring techniques on various Electronic parameters using simulation and experimentation tools.			3	3										2
		CO5	Apply the theoretical concepts to measure different parameters.					4									3
17ME1002	Engineering Graphics	CO1	Understand the principles of drawing and use of drafting instruments	6	6			6								6	
		CO2	Draw engineering curves and scales.	3	3			3								6	
		CO3	Draw the projections of points, lines, planes and solids		4			3								4	
		CO4	Draw the surface sheath of solids by development of surfaces and the sections of														
		CO5	Understand the principles of drawing and use of drafting instruments	3	3			6								3	
17UC0008	INDIAN CONSTITUTION	CO1	To understand Constitutional development after Independence												2		
		CO2	To learn the fundamental features of the Indian Constitution												2		
		CO3	To get a brief idea of the powers and functions of Union and State Governments												2		
		CO4	To understand the basics of working of Indian Judiciary and the Election Commission												2		
17EM2205	Linear Integrated Circuit Analysis	CO1	Analyze the concepts of operational amplifiers and their applications.		2												2
		CO2	Analyze the concepts of various active filters and their applications		3												3
		CO3	Analyze the concepts of various Feedback amplifiers and their applications		3												3

		CO4	Analyze the concepts of various data converters and their applications															4
		CO5	Develop applications involving the usage of opamps ,filters, feedback amplifiers and data converters		3													3
17GN1101	ECOLOGY AND ENVIRONMENT	CO1	Understand the importance of Environmental education and conservation of natural resources.						1									
		CO2	Understand the importance of ecosystems and biodiversity.													1		
		CO3	Apply the environmental science knowledge on solid waste management, disaster management and EIA process.						3									
		CO4	Understand the importance of Environmental education and conservation of natural resources.						1									
17EM1101	Introduction to ECSE Engineering	CO1	Discuss the various applications of electronics in everyday lives and Understand the working of					2										2
		CO2	Understand the usage of diodes, LED,LCD Sensors in design of electronic applications					3										3
		CO3	Understand the applications of computers in day to day life and various software packages					3										3
		CO4	Understand the basics of computer networks ,internet and design web pages using HTML															2
		CO5	Implement the Basic Components, Sensors and Communication Modules using Arduino and Apply various Software packages to solve real					3										3
17 EN1201	Building blocks for Communication Skills	CO1	Improve pronunciation skills and understand the method of identifying antonyms.					2										2
		CO2	Apply writing strategies for office/ formal communication					2										2
		CO3	Analyse types of reading techniques and improve reading speed.					3										3
		CO4	Analyse different cultures and the importance of empathy in cross-cultural communication.					3										3
17MT1203	Multivariate Calculus	CO1	Determine extreme values for functions of several variables					2										2
		CO2	Determine area, volume and moment of inertia through multiples integrals					3										3
		CO3	Apply the concepts of vector calculus to calculate the gradient, directional derivative, arc		6			6										6

		CO4	Obtain analytical and numerical solutions of Heat and wave equations		6			6									6
		CO5	Verify the solution of problems through MATLAB		6			6									6
17EN3102	Instant Communication Skills	CO1	Analyse the concept of Group Discussion and speak effectively during the discussion.				3	2									
		CO2	Apply and analyse various concepts of writing strategies in professional communication skills				3	2									
		CO3	Analyse vocabulary and apply the types of				4	2									
		CO4	Apply the mechanics and application of presentation skills and apply people skills in				3	2									
17EM5105	WEB SERVICES	CO1	Acquire fundamental knowledge related to developing an application using the WEB services related Technologies.					2									2
		CO2	Acquire fundamental knowledge related to various technologies used for implementing WEB services that					2									2
		CO3	Should be able to develop small WEB services-oriented applications through the use of XML language					3									3
		CO4	Should be able to develop applications using third part services which are launched on different servers					3									3
		CO5	Must be able to develop a large, maintainable, and perform applications		6			6									6
17EM5212	Data Science and Big Data Analytics	CO1	Ability to find and transmit data emanated from different embedded and IoT devices					2									2
		CO2	Ability to use HADOOP and MAP reduce tools in the process of undertaking Analytics					4									4
		CO3	Ability to develop data Modelling, Structuring and Analytics using “R” Language					4									4
		Co4	Ability to conduct various kinds of analytics on the big data especially using text					4									4
17EM5102	Advanced Microprocessors and Micro Controllers	CO1	Able to describe the architecture of ARM7 Processor (LPC2148)	2													
		CO2	Able to interface various devices to ARM processor and program the same using Embedded C Language		4												
		CO3	Able to describe Interrupts and A/D, D/A of ARM7 Controller		2												
		CO4	Able to interface various devices through Communication protocols		4											4	

17EM5101	Sensors and Actautors	CO1	To make the students understand the operating principles, signal conditioning, and A/D	2														
		CO2	The students must be able to trace of the Analog signal flow from the sensors till the time the data is received at the controller side.		4													
		CO3	The students must be able to trace of the Analog signal flow from controller till the time the actual control is exercised		4													
		CO4	The students must be able to trace of the Digital signal flow from the digital sensors till the time the data is received at the controller side.		4												4	
17EM5210	NETWORKING OF EMBEDDED SYSTEMS	CO1	Able to understand and describe serial communication protocols using 8051 and LPC2148 controllers.	2														
		CO2	Able to understand and describe I2C and USB communication protocols.		4													
		CO3	Able to understand and describe CAN communication protocol		4													
		CO4	Able to understand and describe wireless communication protocols		4												4	
17EM5103	HARDWARE SOFTWARE CODESIGN	CO1	Able to understand hardware and software codesign models	2														
		CO2	Able to understand the different methodologies for hardware/software codesign		2													
		CO3	Able to understand the interfacing techniques for hardware and software.		2													
		CO4	Able to understand the high-level synthesis model and analyze RTL optimization.		4												4	
17EM5219	SYSTEM ON CHIP	CO1	Able to understand the system architecture concepts	2														
		CO2	Able to understand the requirements for processor selection strategies.		2													
		CO3	Able to understand the requirements for memory selection strategies for SoC development.		2													
		CO4	Able to understand the bus architectures and interconnect architectures and analyze the different case studies		4												4	
	EMBEDDED	CO1	Able to understand security trends and policies	2														
		CO2	Able to understand embedded operating system security techniques.		3													

17EM5220	EMBEDDED SECURITY	CO3	Able to understand and describe software security developments and upgrades.		2												
		CO4	Able to understand and describe cryptography techniques.		3												
17EM5107	FUNDAMENTALS OF IOT	CO 1	Understand functional blocks of IoT devices							2						2	
		CO 2	Demonstrate the Technologies involved in IoT based Systems							2						2	
		CO 3	Apply different wireless technologies used for the development of IoT based Networks							3						3	
		CO 4	Analyse various IOT Real time application design Components							4						4	
17EM5108	IoT Application Development	CO 1	Ability describe the Raspberry PI board architecture and components				2									2	
		CO 2	Ability to design IOT based Applications				2									4	
		CO 3	Ability to develop IOT applications using Python							2						2	
		CO 4	Ability setup environment required for developing applications using Python and Raspberry PI board				4									4	
17EM5109	Wireless and Mobile Communication	CO 1	To make the students aware of fundamental concepts related to Wireless communication							2						2	
		CO 2	To make the students aware of fundamental concepts related to Mobile communication							2						2	
		CO 3	Ability develop small wireless application for communicating between different embedded systems							3						3	
		CO 4	Ability develop small mobile application for communicating between different embedded systems							3						3	
17EM5214	WIRELESS SENSOR NETWORKS	CO 1	To Understand the Architectural Overview of IoT		2											2	
		CO 2	To Understand the IoT Reference Architecture and Real World Design Constraints							2						2	
		CO 3	To Apply the various IoT Protocols in Datalink and Network layers				4									4	
		CO 4	To Apply the various IoT Protocols in Transport and Session Layers							2						2	

17EM5215	CLOUD COMPUTING FOR IOT	CO 1	To understand the differences between traditional deployment and cloud computing							2							2
		CO 2	Understand different cloud infrastructures and service models								2						2
		CO 3	Apply the concepts of data analytics							3							3
		CO 4	Analyze the statistical data analysis and methods for evaluation								4						4
17EM40B2	E-COMMERCE	CO1	Should gain fundamental knowledge related to development of E-commerce sites / portals							1							
		CO2	Should be able to design, develop and Host small e-commerce sites /portals								2						
		CO3	Should be able to implement security enforcement mechanisms within e-commerce sites /portals					1									
		CO4	Should be able to implement different payment mechanisms within e-commerce sites / portals					2									
17EM40B1	LINUX PROGRAMMING	CO1	Must have full understanding of Linux Commands and Bourn shell programming							2							
		CO2	Ability to develop Bourn shell programs interfaced with LINUX utilities								2						
		CO3	Ability to develop Bourn shell programs interfaced with SED and AWK user interface systems and File management systems					2									
		CO4	Ability to develop Bourn shell programs that implements inter process communication and process management					2									
17TS5001	Skilling for Engineers3 –(JAVA)	CO1	Design and Develop applications using inheritance ,polymorphism	3	3			3								6	
		CO2	Develop applications using abstract classes and packages	3	3			3								6	
		CO3	Develop applications using interfaces and exceptions		3			3								6	
		CO4	Develop applications using collections	3	3			3								6	
17TS502	Skilling for Engineers-4(Python Programming)	CO1	Develop applications using python for home automation	3	3			3									
		CO2	Develop REST services for smart applications	6	6			3									6
		CO3	Develop applications using python for intrusion detection		6			6									6
		CO4	Develop applications using python for smart parking	3	6			6									6
		CO1	Understand the security requirements of IoT	2													2

17EM5113	Security in Internet of Things	CO2	Understand the cryptographic fundamentals for IoT		2												2
		CO3	Understand the privacy and trust models for IoT		4												4
		CO4	Analyse various Cloud IoT Security controls		4												4
17MT1204	Logic and Reasoning	CO1	Understand how to use Venn diagrams to find the conclusion of statements, solve puzzles using binary logic.	2													2
		CO2	Understand to solve problems on clocks, calendars and problems on Non verbal reasoning.		2												2
		CO3	Understand the available models for Venn diagrams with given data, solve problems relating to cubes and number and letter series.		2												2
		CO4	Understand the techniques used to solve problems puzzles using analytical reasoning on coding and decoding and blood relations		2												2
17 EN1201	Building blocks for Communication Skills	CO1	Apply the practical knowledge of using action words in sentence construction.	3													2
		CO2	Apply and analyse the right kind of pronunciation with regards to speech sounds and able to get different types of pronunciations.		4												2
		CO3	Apply the concept of fundamental principle of counting to solve the problems on linear, circular permutations and also for the problems on selections. Apply the concept of probability, while doing the problems on Leap year & Non-Leap year problems, coins, dice, balls and cards.		4												4
		CO4	Analyze the given conditions and finding out all the possible arrangements in linear & circular order. Analyze the given numbers or letters to find out the hidden analogy and apply that analogy to find solutions. Finding the odd man out by observing the principle which makes the others similar.		4												4
		CO1	Determine extreme values for functions of several variables	3													2

17MT1203	Multivariate Calculus	CO2	Determine area, volume and moment of inertia through multiples integrals		3												2
		CO3	Apply the concepts of vector calculus to calculate the gradient, directional derivative, arc length, areas of surfaces and volume of solids in practical problems				6										4
		CO4	Obtain analytical and numerical solutions of Heat and wave equations			4											4
17UC2204	Aptitude Builder 1	CO1	Apply the concept of Critical Reading and Analytical Reading and comprehend the keyideas and gist of a passage.Understand the importance of the presentation skills, analyze the given topic, apply various strategies and the principles of grammar in written expression.	2				3									2
		CO2	Apply the concepts of grammar, various strategies and the usage of formal language in written expression. By using synonyms rewrite the same text in the same format and meaning. Write the gist of the given text.		2				4								2
		CO3	Apply the concepts of Numbers to solve the problems related to divisibility rules, problems based on Unit's digit, Remainders, Successive Division, Prime Factorization, LCM & HCF problems. Apply the concepts of Averages &Alligations, students will be able to solve the problems related to Averages as well as problems based on Mixtures.		4					4							4

		CO4	Apply the various concepts of cubes to find out how to cut a cube to get the maximum number of smaller identical pieces, how to minimize the number of cuts required to cut a cube into the given number of smaller identical pieces, how to count the number of smaller cubes which satisfy the given painting scheme. Apply the principles of binary logic to solve problems involving truth-tellers, liars and alternators. Analyze the given data to form an ordered arrangement from an unorganized raw data.		4						4					4	4
17EN3102	Instant Communication Skills	CO1	Apply the concepts of accurate English while writing and become equally at ease in using good vocabulary and language skills.	3													2
		CO2	Understand the importance of pronunciation and apply the same day to day conversation.					3									2
		CO3	Apply the concepts of Ratios, Percentages, Averages and Analysing the given information, a student is required to understand the given information and thereafter answer the given questions on the basis of comparative analysis of the data in the form of tabulation, bar graphs, pie charts, line graphs. Analyse the given data to find whether it is sufficient or not.		4				3							3	4
		CO4	Apply the basic functionality of Clocks and Calendars to find the solutions for the problems. Analyze the given symbols to understand the hidden meaning of the given expression and finding the solutions. Analyze the given conditions and finding out all the possible arrangements in linear & circular order.		4			3									4
		CO1	Understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.	2			2					2				2	2

17CS2103	Discrete Mathematics	CO2	Understand the basics of discrete probability and number theory and be able to apply the methods from these subjects in problem solving.		2								2		2		2
		CO3	Be able to use effectively algebraic techniques to analyse basic discrete structures and algorithms.		4							2					4
		CO4	Understand some basic properties of graphs and related discrete structures, and be able to relate these to practical examples		4							2				2	4
17UC3105	Aptitude Builder 2	CO1	Apply the strategies and techniques learnt in carrying out conversations in different contexts. Analyse the different parameters and formats of written technical communication and apply in everyday work and life.			3				2						2	2
		CO2	Analyse the concepts of critical and analytical reading skills. Apply the strategies and techniques learnt in handling interviews in different contexts.				2				2						2
		CO3	Apply the concepts of Ratio & Proportion, Percentages, Profit &Loss, Simple & Compound Interest, students will be able to solve the problems based on Ratios, problems involving Percentages, problems related to cost price, selling price, profit, loss, marked price and discounts, problems involving interest.							3						3	
															4	4	
		CO4	Analyze the given series of numbers to predict the next number in the series. Analyze the given set of numbers or letters to find the analogy. Analyze the given data to find the code which is used to encode a given word and use the same code in the process of decoding. Apply the given set of conditions to select a team from a group of						4	2							4
17EM5111	Fundamentals of Cyber Security	CO1	Understand the need for cyber security and analyze the risk involved	3	3			3				2				2	
		CO2	Analyze various types of security threats and electronic payment systems	3	3			3				4				4	
		CO3	Analyze the security issues involved in developing secure information systems		3			3				4				4	

		CO4	Analyze the security policies standards and cyber laws	3	3			3				4				4	
17EM5112	Mobile and Wireless Security	CO1	Analyze the Security and Privacy aspects of Mobile and Wireless Networks	3	3			4								4	
		CO2	Understand the mobile system architectures and related security issues	3	3			2								2	
		CO3	Analyze the security issues in wireless networks		3			4			4					4	
		CO4	Analyze RFID security and privacy issues	3	3			3								4	
17EM51216	Computer Forensics	CO1	Understand the principles and methodologies of digital forensics	3	3			3								1	
		CO2	Analyze the techniques involved in data acquisitions and duplication	3	3			3								4	
		CO3	Analyze the vulnerabilities in routers		3			3								4	
		CO4	Understand the basics of forensics acquisition	3	3			3								1	
17EM5217	Intrusion Detection Systems	CO1	Understand the characteristics of intrusion detection systems	3	3			3								2	
		CO2	Analyse limitations of existing IDS tools through case studies	3	3			3								4	
		CO3	Analyse various attacks on computers and estimate the severity		3			3								4	
		CO4	Analyse the techniques for visualizing the network data	3	3			3								4	
17EM5218	Ethical Hacking and Web Security	CO1	Analyse the security features of various operating systems	3	3			3								4	
		CO2	Analyse the vulnerabilities in network devices	3	3			3								4	
		CO3	Analyse various wireless hacking mechanisms		3			3								4	
		CO4	Analyse the techniques for session hijacking ,email hacking and web application hacking	3	3			3								4	
17EM5104	Web Programming with Python	CO1	Acquire fundamental knowledge related to Python Conditional Statements and Strings	3	3			3								3	
		CO2	Acquire fundamental knowledge related to Lists, Tuples and Dictionaries	3	3			3								3	
		CO3	Should be able to develop application using OOPS Concepts		3			3								3	
		CO4	Should be able to develop applications using Database Connectivity	3	3			3								3	

17EM5106	Web Security	CO1	To Acquire basic knowledge about the WEB sites and Cryptography	3	3			3								2	
		CO2	To acquire basic knowledge about attacking and counter attacking of WEB servers	3	3			3								2	
		CO3	To acquire basic knowledge about attacking and counter attacking of Browsers		3			3								2	
		CO4	Should be able to implement counter attacking mechanisms within un-secures WEB application considering different attacking systems	2	2			2								2	
17EM5213	Web Semantics	CO1	Must Acquire theoretical knowledge related to WEB semantics, ontology learning and languages that can be used for the development of WEB semantics	2	2			2								2	
		CO2	Must be knowledgeable using tools to develop web semantics for various real-life applications	2	2			2								2	
		CO3	Able to understand ontology Management & learning for semantic web	2	2			2								2	
		CO4	Must develop a real-life application that require use of WEB semantics	4	4			4								4	
17EM5211	Cloud Computing	CO1	Ability to explain various concepts, architectures and deployment models relating to the cloud computing technologies	2	2			2		2						2	
		CO2	Ability to develop sample applications using SaaS deployment Model	2	2			2		2						2	
		CO3	Ability to develop sample applications using PaaS deployment Model	3	3			3		3						3	
		CO4	Ability to develop sample applications using IaaS deployment Model	3	3			3		3						3	
17CY1001	Engineering Chemistry	CO1	Predict potential complications from combining various chemicals or metals in an engineering setting	3	3			3								3	
		CO2	Discuss fundamental aspects of electrochemistry and materials science relevant to corrosion phenomena	4	4			4								4	
		CO3	Examine water quality and select appropriate purification technique for intended problem	3	3			3								3	
		CO4	Apply polymers, conducting polymers ,green chemistry and nano chemistry to engineering processes	4	4			4								4	

		CO5	An ability to analyze & generate experimental skills	4	4			4								4		
17EC2102	Digital System Design	CO1	Able to understand the computer system and its sub modules, handling call	3	3			3										
		CO2	Understand the functionality and design the CPU functional units - control unit, registers, the arithmetic and logic unit, the instruction execution unit, and the interconnections among these components.	3	3			3										
		CO3	Understand, analyse and design different types of I/O transfer techniques.		3			3										
		CO4	Demonstrate various Pipelining, Understand the design issues of RISC and CISC CPUs and the design issues of pipeline architectures	3	3			3										

professor incharge academics

HoD-ECM