

Department of IOT

COURSE OUTCOME

2022-2026

S. No.	Course Code	Course Name	CO No.	CO Description
		Integrated Professional English	1	Understand the concepts of grammar to improve communication, reading, and writing skills
1	22UC1101		2	Demonstrate required knowledge over Dos and Don'ts of speaking in the corporate context . Demonstrate ability to face formal situations / interactions.
			3	Understand the varieties of reading and comprehend the tone and style of the author. Skim and scan effectively and appreciate rhetorical devices
			4	Apply the concepts of writing to draft corporate letters, emails and memos
		English Proficiency	1	Demonstrating different interpersonal skills for employability
2	2211C1202		2	Distinguishing Business essential skills
	22001202		3	Classifying social media and corporate communication skills.
			4	Applying analytical thinking skills

3	22UC2103	Professional Communication Skills	1	Able to spot the common grammatical errors related to sentence structure, preposition, concord, relative and conditional clauses and parallel structures. The learner should be efficient to construct a context-determined text in addition to learning Technical Writing Skills.
			2	Able to read, understand, and interpret a text intrinsically as well as extrinsically. The learner can browse a text quickly to come-up with a gist and personal interpretation. Able to create a healthy work-environment and prove to be an asset or one of the most reliable resources to the organization.
			3	Apply the concepts of time and work; men-time-work problems based on wages, pipes and cisterns. Apply the concepts of time and distance and solve the problems related to average speed, relative speed.
			4	Apply Venn diagrams to find out appropriate conclusions from the given statements. Apply the logical implications and also the negations of various connectives to find the solutions. Analyze the data and represent in the form of Venn diagrams to find relations between any given set of elements.
			1	Verbal ability
4	22UC2304	Corporate readiness Skills	2	Soft skills
•	22002301	Corporate readmess Skins	3	Quantitative aptitude
			4	Reasoning
7	221100007	Indian Heritage and Culture	1	To familiarize with various aspects of the culture and heritage of India through ages.
/	2200007		2	To acquaint with the contributions of Indians in the areas of languages and literature, religion and philosophy

			3	To understand the Social structure and the spread of Indian culture abroad
			4	To know the development of Science and Technology in India through ages and to appreciate the contributions of some of the great Indian scientists
			1	To understand Constitutional development after Independence
			2	To learn the fundamental features of the Indian Constitution
8	22UC0008	Indian Constitution	3	To get a brief idea of the powers and functions of Union and State Governments
			4	To understand the basics of working of Indian Judiciary and the Election Commission
9	22UC0009	Ecology & Environment	1	Understand the importance of Environmental education and conservation of natural resources.
			2	Understand the importance of ecosystems and biodiversity.
			3	Apply the environmental science knowledge on solid waste management, disaster management and EIA process.
	22UC0010	Universal Human Values & Professional Ethics	1	Understand and identify the basic aspiration of human beings
10			2	Envisage the roadmap to fulfill the basic aspiration of human beings.
			3	Analyze the profession and his role in this existence.
	22UC0011	Entrepreneurship	1	Learn critical elements of entrepreneurship and its development from institution's perspective
11			2	Understand the process of entrepreneurship and its eco system in an educational institute to fit in entrepreneurship zone
			3	Understand & Learn Design Thinking skills towards product innovation & prototype design

			4	Learn the essential component of planning a new startup, including a. Recognizing viable market opportunities & Market assessment via secondary market research and customer discovery via primary market research b. Creating a profitable business model and an executable business plan c. Protecting the intellectual property at the heart of their technology company d. Developing financial projections that are aligned with the proposed business plan
		5	Study the practices of working with Co-students in other discipline, integrating creative business strategies with solid engineering and effectively working in multi disciplinary teams	
		6	Recognize the methods of making decisions in highly uncertain and unstructured environments to take feedback from a large variety of sources that use it to improve their business plans, or help them to 'pivot' and find alternative ideas or approaches	
	1 20MT1101 Mathematics for Computing	1	Apply matrix algebra to the real-world applications in engineering, physical and biological sciences, computer science, finance, economics and solving the system of equations.	
1		Mathematics for Computing	2	Apply basic and computational techniques on discrete structures like relations, orders, functions & FSM, Lattices, and propositional &predicate logic
			3	Apply graph theory to solving real world structures and their related applications.

			4	Apply Statistical methods to solving the real-world applications in Engineering science, Economics and Management.
			5	Apply basic concepts of Aptitude and Reasoning to solve engineering and real world problems (Tests in skilling hours)
			1	Apply differential and integral calucullus to find maxima and minimum of a functionctions.
2	101/172102	Mothematics for Engineers	2	Demonistrate the forier series and Laplace transforms.
Z	191012102	Mathematics for Engineers	3	Describe the probability, randam variables and Distributions
			4	Explain the complex variables analytic functionsstochastic process and algebric structures
	3 19BT1001	Biology for Engineers	1	Acquire the Knowledge of basic biology
3			2	Acquire the Knowledge of Human Biological Systems
			3	Acquire Knowledge on Microorganisms and Biosensors
	4 22UC1102 Design Thinking and Innovation	Design Thinking and Innovation	1	Understand the basics of design thinking and its implications in product or service development
			2	Understand and Analyse the requirements of a typical problem
4			3	Plan the necessary activities towards solving the problem through ideation and prototyping
		4	evaluate the solution and refine them based on the customer feedback	
		SCIEN	CE ELEC	CTIVE-1
1	22DH1008	Physics for Electronic Engineers	1	Ability to understand classification of solids based on their Energy Bands.
1			2	Ability to understand the conducting and semiconducting properties of solids at the microscopic level.

			3	Ability to understand the dielectric properties of materials at the microscopic level and their applications.
		4	Ability to understand the magnetic interactions in materials and the applications.	
			5	Apply the knowledge on structure and properties of materials while executing related experiments and develop some inter disciplinary projects
	2 19 PH1004 Solid State Physics	1	Understands spin and orbital motion of electrons in determining magnetic properties of materials and identifies their role in classification soft & hard magnetic materials having specific engineering applications.	
2		Solid State Physics	2	Understands role of molecular level vibrations in determining thermal properties of materials, heat treatment methods for changing the microstructure of materials and micro and macro level responses of materials subjected to load, for identification of materials having specific engineering applications.
			3	Understands the role of electronic energy band structures of solids in governing various electrical and optical properties of materials.
		4	Understands the role of electronic energy band structures of solids using various models, classification of materials based on their band structures and their properties	
			5	Apply the knowledge on structure and properties of materials while executing related experiments and develop some inter disciplinary projects.

SCIENCE ELECTIVE-2

1	22CY1101	Engineering Chemistry	1	Demonstrate different types of semiconducting materials
			2	Illustrate photo-physical basis of light absorption and emission by materials
			3	Sketch the underlying principles of organic light emitting diodes
			4	Explain the concepts of solar cells modules and memory devices
			5	An ability to apply and generate experimental skills
3	22CY1004	Organic Electronics	1	Explain the concepts of solar cells modules and memory devices
			2	An ability to apply and generate experimental skills

			1	Design basic and complex building blocks for real world problems using structured programming paradigm
			2	Apply computtaional thinking into logic design for solving real world problems
1	20SC1101	Computational Ininking for	3	Apply CRUD operations on basic data structures
		Design	4	Apply CRUD operations on linear data structures
			5	Apply the structured programming paradigm with logic building skills on basic and linear data structures for solving real world problems
2	20SC1202	Data Structures	1	Apply measures of efficiency on algorithms and Analyse different Sorting Algorithms.
			2	Analyse and compare stack ADT and queue ADT implementations using linked list and applications.
			3	Analyse the linked implementation of Binary, Balanced Trees and different Hashing techniques.

			4	Analyse different representations, traversals, applications of Graphs and Heap organization.
	5	Develop and Evaluate common practical applications for linear and non-linear data structures.		
	20ME1103	Design Tools Workshop	1	Design a product using 3D modeling in Auto Desk Fusion 360 through the concept of Engineering Design Process.
2			2	Design of static webpages using HTML5 and CSS.
5			3	Apply the concepts of Latex in writing the reports.
			4	Apply visualization techniques in creating data visualization dashboards with tools like Power BI.

			1	Understand the structure of a digital computer and design combinational circuits for processor using the principles of Boolean Algebra and gates
			2	Analyze the operation of latch/flip-flop and design timing and sequence control circuits using flip-flop
6	22EC1101	Digital Logic & Processors	3	Apply the programmable logic and design digital circuits using Programmable logic devices
			4	Apply the minimization techniques and Construct optimized combinational and sequential logic circuits
			5	Design of combinational and sequential circuits with logic gates and flip-flops with a verification using Logisim and Verilog HDL tool
7	22EC1202	Computer Organization & Architecture	1	Able to understand the computer organization and architecture through Arithmetic and logic unit, system bus, addressing modes and instruction set
			2	Apply the concept of arithmetic and logical unit in CPU design and memory mapping techniques like direct mapping, Associate, and block set associate mapping in Cache memory
			3	Apply the concepts of the DMA controller and I/O transfer techniques in data transfer betwwen peripharals and processor
			4	Analyze pipelining operation in instruction execution and parallel computing architectures to speed up program execution
			1	Analyze the V-I relations of different passive circuit elements
8	22EC1213	Design of Basic Electronics and Circuits	2	Apply different circuit analysis techniques on practical circuits.
			3	Analyze the V-I relations of different active circuit elements.

			4	Identify the practical circuits comprising semi conductor devices.
			1	Analyse the Analog and Digital electronic systems and their impacts on the performance
			2	Design PCB art -work by following PCB design rules using the Software and learning about fabrications, packaging and EMI/EMC issues
0	22EC2111	Electronic System Design Workshop	3	Apply the Raspberry Pi microcontroller to design an embedded system for modern electronic system design
9	22602111		4	Analyse the Electronic Circuits for the noise reduction designs in components and circuits, high frequency designs and CAD packages
			5	Design the different Electronic Circuits and Develop with PCB FABRICATION techniques and also design an embedded system using raspberry Pi to demonstrate for social problems.
10	22EC2214	IoT Workshop	1	Demonstration of various Sensors both Analog & Digital for IoT Applications
			2	Applying & Interfacing various micro controllers with IoT: Micro controllers boards, ESP8266, Peripherals (Motors, Camera, Speaker, Displays), Controlling through Mobile & Web
			3	Analyze different protocols with IoT Data Communication: Wi-Fi Protocols, Bluetooth, BLE, WSN, Zigbee, RFID, NFC, Client Server, Cloud.

	4	Examine the various Protocols & Case Studies : Issues & Challenges : Security, Privacy, Scalability, Store and AnalyticsCase Studies: Health, Smart cities, Village/ Agriculture
	5	Design and develop various mini projects using Node MCU, ESP32 and Raspberry Pi for various applications.

1	22EC2104:	Electronic Devices and	1	Understand the BJT operations and a circuit function.
		Circuit Design	2	Understand the FET operations and circuit functions
			3	Understand the OpAmp operations and circuit functions
			4	Understand the Op-Amp filters and Oscillator circuit functions
2	22IN2101	Processors and	1	Understand the architecture and programming concepts of 8086
		Controllers		Microprocessor
			2	Understand the architecture and programming concepts of 8052
				microcontroller
			3	Apply the Programming concepts of the 8051 and Interfacing of Peripherals.
			4	Understand the basic architectures of PIC and ARM 7 microcontrollers and
				design the systems.
3	22IN2102	Sensors and Actuators	1	Understand fundamental principles of sensing technology
			2	Understand the various sensors and implementation and interfacing
				communication technologies
			3	Understand actuator principles, working, and various types of actuators.
			4	Apply Practical experience with sensor and actuator Interfacing with
				Microprocessor/controller to build electronic system.
4	22IN2103	Data Science and Data	1	Ability to find and transmit data emanated from different embedded and
		Analytics		IOT devices
			2	Ability to use HADOOP and MAP reduce tools in the process of undertaking
				Analytics

			3	Ability to develop data Modelling, Structuring and Analytics using R
				Language
			4	Ability to conduct various kinds of analytics on the big data
				especially using text.
5	22EC2107	: AI, ANN Tools, and	1	Understand the basics of Probability, statistics and its applications.
		Applications	2	To understand the applications and tools of AI
			3	To understand the concepts of AI searching techniques and ANN models
			4	To Implement AI and ANN Models for real time problems
6	22EC2208	Analog and Digital	1	Analyze the linear and nonlinear modulation techniques
		Communication	2	Explore the basic digital communication systems and principles
			3	Analyzing various line coding procedures and signaling schemes to facilitate
				data communications.
			4	Applying the concepts of multiple access and various types of networks.
7	22EC2210	Data Networks and	1	Introduction to Computer networks and Data Link Layer
		protocols	2	Network layer and Internetworking
			3	Transport layer, Session Layer, Presentation Layer and Application Layer
			4	Advanced Topics: Cryptography, Advancements in Application layer,
				Wireless LANs, Network Security
8	22IN2201	: Embedded Systems	1	Understand embedded systems components, design challenges and
		Design		applications, application of program on chip peripherals for single purpose
				controller.
			2	Apply the different sensors, actuators (off chip peripherals) and
				communication protocols for developing embedded systems.
			3	Understand the software architectures, task communication, and identify
				tasks related issues in RTOS.
			4	Identify an architectural design of available technologies and solve the
				societal challenge using IoT.
9	22IN2202	: IoT Principles &	1	Understand the concepts of IoT Architecture, Reference model and IoT
		Architecture		enabling technologies.
			2	Understand the logical design of IoT system and communication
				technologies.

			3	Understand IoT networking protocols and Authentication Protocols for IoT
				Application layer.
			4	Apply IoT protocols and programming concepts for real-world problems.
10	22IN3101:	Cloud Computing for	1	Understand the process involved in sensing and moving data across the
		ІоТ		network to be stored in the clouds and extract the same for conducting the
				analytics.
			2	Understand the fundamentals related to cloud computing especially relating
				to data storage into cloud and retrieval of the same from the clouds.
			3	Ability to develop application for storing the sensed data on to the clouds
			4	Ability to deploy IoT device into cloud, Able to implement the
				communication between IoT device and cloud (Thingspeak, Azure and AWS)