



School of Engineering and Applied Sciences
Electronics and Communication Engineering Department
M. Tech in Internet of Things

AY: 2021-2023

**Department of Electronics and Communication
Engineering**

SRM University-Andhra Pradesh.

1. A brief description of the program

The Internet of Things (IoT) represents a new stage in the digital revolution, fully contributing to the construction of a digital society. This has been accelerated by the recent advancements in Electronic systems, Networking and Communication technologies, Bigdata and Machine Learning to make the life of humans better and easier with time. Internet of Things (IoT) is a network of physical objects - devices, vehicles, buildings, industry equipment and any other objects we use day to day- embedded with electronics, sensors, software, and network connectivity that enables these objects to collect and exchange data. It is envisaged that by 2030 more than 50 billion devices, or things, around the globe are expected to be connected to the Internet and make the Internet of Things (IoT) a mainstream technology. Few applications of Internet of Things (IoT) include Smart Cities, Industrial Internet of Things (IIoT), Self-Driving cars, Smart Grids, Smart Homes and Buildings, Smart Infrastructure, Smart Agriculture, Smart Health, Smart Mobility and many such domains which are driving the phenomenal growth of IoT. Businesses have already started exploring and implementing how to adopt IoT for their operations, but they are lacking thorough IoT skills and knowledge among employees and management.

2. Curriculum & Syllabus

As per M.Tech regulations, a student is required to complete total of **64 credits** as per below division.

Semester-I					
Course Code	Course Name	L	T	P	C
ECE 5101	IoT Architecture and Protocol	3	0	0	3
ECE 5103	Advanced Signal Processing and Data Analytics	3	0	2	4
ECE 5105	Smart Sensors and Actuators	3	0	0	3
ECE 5107	Computer Network and Internet Protocol	3	0	2	4
ECE 5109	Embedded Programming	3	0	2	4
ECE 5113	Mini Project 1	0	0	4	2
ECE 5117	Audit Course 1	2	0	0	0
ECE 5119	Fundamentals in Business, Innovation and Project Management	1	0	0	1

TOTAL	18	1	10	21
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Semester-II					
Course Code	Course Name	L	T	P	C
ECE 5201	IoT Security	3	0	0	3
ECE 5203	Wireless Sensor Network and IoT	3	0	2	4
ECE 5205	Deep Learning for IoT	3	0	2	4
ECE 5207	SOC design for IoT	3	0	2	4
ECE 5209	Mini Project 2	0	0	4	2
ECE 5213	Audit Course 2	2	0	0	0
ECE 5217	Technical Elective	3	0	0	3
TOTAL		17	0	12	21

Semester-III					
Course Code	Course Name	L	T	P	C
ECE 5301	Technical Elective	3	0	2	4
ECE 5303	Technical Elective	3	0	2	3
ECE 5305	Technical Elective	3	0	2	3
ECE 5305	Technical/Open Elective	3	0	2	3
ECE 5309	M.Tech Dissertaion/Major project Part 1	0	0	8	3
TOTAL		12	0	16	16

Semester-IV					
Course Code	Course Name	L	T	P	C
ECE 5401	M.Tech Dissertaion/Major project Final	0	0	12	6
TOTAL		0	0	12	6

Tentative List of Technical Elective Courses are as follows:

- Designing Embedded systems with UML
- Distributed Systems and Cloud Computing
- Advanced Digital IC Design
- Analog and Mixed Signal IC Design
- VLSI Accelerators for AI edge Computing Devices
- RFIC Design
- CMOS Circuit Design for 5G
- Signal Processing and Computer vision
- Advanced Data Science Topics
- Hardware/Software Co-Design
- Wireless Access Technologies
- Security applications in networking and distributed systems
- Hardware Security
- Machine Learning for Communication systems
- Mobile Advanced Networks
- Wireless Access Technologies
- Object-Oriented Programming in C++ and Java
- Security applications in networking and distributed systems
- Semantic Web and Information Extraction technologies

3. How does M.Tech in IoT unique/ different from others? What are the values a candidate can derive after joining the M.Tech in ECE Department?

M.Tech in IoT Programme Objectives and Highlights

- Students will learn underlying technology that can be found in IoT devices
- Designed to impart students with latest aspects and technologies in IoT through introductory and advanced level courses followed by hands on and research within the field of specialization
- Students will be able to design and develop IoT applications and services adapted to industrial needs
- Students will be able to follow multidisciplinary approach for design, development, simulation, and implementation of IoT based systems

- Designed to meet the high employer demand for experts or professionals that can engineer new interactive services, acquire, fuse, and process the data collected from various sensors, actuators, controllers, and other devices, and develop novel architectures to interconnect these elements as part of larger and more diverse systems

Expected Graduate Attributes

- Students will gain knowledge and practical skills in the strong understanding of fundamentals of IoT devices and embedded programming including design, modelling, simulation, and implementation
- Students will gain knowledge and practical skills in the key components of an IoT system and how to design and build them.
- Students will gain knowledge and practical skills in securing an IoT system against malicious attacks at different levels such as system level, network level, software level and hardware level.
- Students will be equipped with Skills to implement IoT platforms for applications in the area of environment, health, agriculture, Industrial IoT and other novel applications
- Students will be equipped with the ability of design and analysis of digital and analog interface circuits used for IoT, such as comparators, amplifiers, ADC, and DAC, and implementation using FPGA/ASIC design tools and RF circuits for wireless connectivity.
- Students will gain knowledge and practical skills in the design and optimisation of wireless communication systems using machine learning techniques.

4. What will be the syllabus for written test for M.Tech in IoT by ECE Department?

- To be eligible, candidates need BE/BTech degree in Electronics and Communication Engineering or Electronics and Electrical Engineering or Electronics and Instrumentation Engineering.
- First class in BE/BTech degree
- Direct admission to candidates with GATE score above 95 percentile.
- For Non-GATE candidates, admission will be based on written Test followed by personal Interview by faculty members in the Department.

- Syllabus for Written Test: Students should be proficient in latest GATE syllabus of Signals and Systems, DSP, Communication Systems, Analog Electronics, Digital Electronics, Control systems, Microprocessors, Electromagnetics along with general aptitude.

5. Are we planning to provide internship/placement assistance to the candidates?

students will be strongly encouraged and supported by the Department and faculty members to do an internship to gain industry experience and placement opportunities by having collaboration with leading Industries and startups in IoT domain.

6. What will the job opportunity or career prospects be for M.Tech in IoT by ECE Department?

Typical Job roles for students after Graduation in leading Industries:

- IoT Design Engineer
- IoT Consultant
- IoT Embedded Systems Designer
- IoT security expert
- IoT Project Manager
- IoT Professional in Sensors and Actuators
- IoT Research Scientist/Engineer
- IoT Innovation Manager
- IoT Solutions Architect

7. List of faculty members who will teach M.Tech aspirants.

The following faculty members are offering courses and guiding thesis and scholarly papers in the areas of IoT

Network and Communication Technologies Domain:

1. Prof. Priya Ranjan
2. Dr. Sreenivasulu Tupakula
3. Dr. Uday
4. Dr. Satish
5. Dr. Sunil Ch
6. Dr. Aniraban Ghosh

7. Dr. Omjee Pandey
8. Dr. Divya
9. Dr. Gautam Rana

Electronic Circuits and Embedded Systems Design for IoT Domain:

1. Prof. Siva Sankar
2. Dr. Ramesh Vaddi
3. Dr. Sujith Kalluri
4. Dr. Pradyut kumar
5. Dr. Anuj Deshpande
6. Dr. Sibendu Samantha

8. Any other information that your department would like to share.

Please visit webpages of individual faculty members for more details about various research activities and projects undertaken by faculty members of ECE Department at <https://srmap.edu.in/seas/electronics-and-communication-engineering/faculty/>