S.A. Engineering College

(AUTONOMOUS)
Approved by AICTE and Affiliated to Anna University, Chennai
(Accredited by NBA, NAAC with "A" Grade & ISO 9001:2015 Certified Institution)
Poonamallee - Avadi Main Road,
Veeraraghavapuram, Thiruverkadu Chennai - 600 077.

Department of Electrical and Electronics Engineering

M.E Embedded System and Technologies

Choice based credit system
choose your own time
choose your own subjects

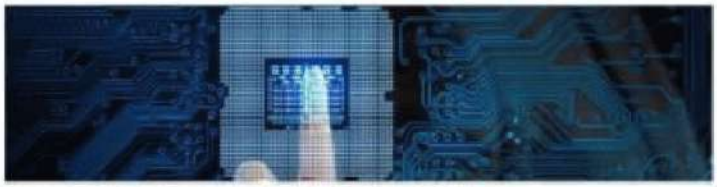
Admissions OPEN

Why M.E. (Embedded System) is a Revolution in Science...???

- Embedded System: A Computer System with a specific, defined function within a larger Mechanical or Electrical system.
- Control many devices -They consume little power, are small in size, and have a low per-unit cost.
- Practically every Electronic Gadget around us is an Embedded system, viz., digital watches, MP3 players, Washing Machines, Security Systems, Scanners, Printers, Cellular Phones, Elevators, ATMs, Vending Machines, GPS, Traffic Lights, Remote Controls, Microwave Ovens and so on.
- Every day, new products are introduced to the market that utilize embedded computers in a number of ways.
- Embedded system: a part of the Internet of Things (IoT), a technology in which objects, animals, or people are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

Key Characteristics of Embedded System Technology:

- All Embedded Systems are task specific. An mp3 player will function only as an mp3 player.
- Embedded systems are created to perform the task within a certain time frame. A car's brake system, if exceeds the time limit, may cause accidents.
- They have minimal or no user interface (UI). A fully automatic washing machine works on its own after the programme is set and stops once the task is over.
- Some embedded systems are designed to react to external stimuli and react accordingly. A thermometer, a GPS tracking device.
- Embedded systems are small sized, can work with less power and are not too expensive.
- Embedded systems cannot be changed or upgraded by the users. Hence, they must rank high on reliability and stability. They are expected to function for long durations without the user experiencing any difficulties.
- Microcontroller or microprocessors are used to design embedded systems.



Scope and Future of Embedded System Technology is Bright:

- The Scope of the Embedded System is better than other fields.
- The career opportunities like Application Software Engineer, Embedded Hardware Engineer, etc. in the Embedded system in India are many.
- In the future, every electronic machine will use an Embedded System.
- The arrival of Artificial Intelligence (AI) will boost the use of Embedded systems.

Job Prospects of Embedded System Engineers:

- Embedded software engineering is a promising career For freshmen as well as experienced engineers.
- An embedded systems engineer is responsible for the design, development, production, testing, and maintenance of embedded systems.
- Embedded System Engineers job and salary trends increase over time.
- The job market for Embedded System Engineers (Analysts) is projected to grow by 21% from 2018 to 2028.
- The increase in job opportunities is observed in industries like Aeronautics, Communication, Defense, robotics, and many more.

I TO IV SEMESTERS CURRICULUM AND SYLLABUS

SEMESTER I

Subjects:
1. Applied Mathematics for Embedded Systems Technologists.
2. Research Methodology and IPR.
3. Design of Embedded Systems.
4. Software for Embedded Systems.
5. Microcontroller Based System Design.
6. VLSI Design and Reconfigurable Architecture.
7. Audit Course I.

Practicals:

8. Embedded System Laboratory - I.
9. Embedded Programming Laboratory - I.

SEMESTER II

Subjects:
1. Real Time Operating System.
2. Embedded System Networking.
3. Embedded Control for Electric Drives.
4. IOD for Smart Systems.
5. Professional Elective I , II.
6. Audit Course II.

Practicals:
7. Embedded System Laboratory - II.
8. Embedded Programming Laboratory - II.

Semester-III

Subjects:
1. Professional Elective III , IV , V.
2. Open Elective.

Practicals:
3. Project Work I.

Semester IV

1. Project Work II.

PROFESSIONAL ELECTIVES

SEMESTER II

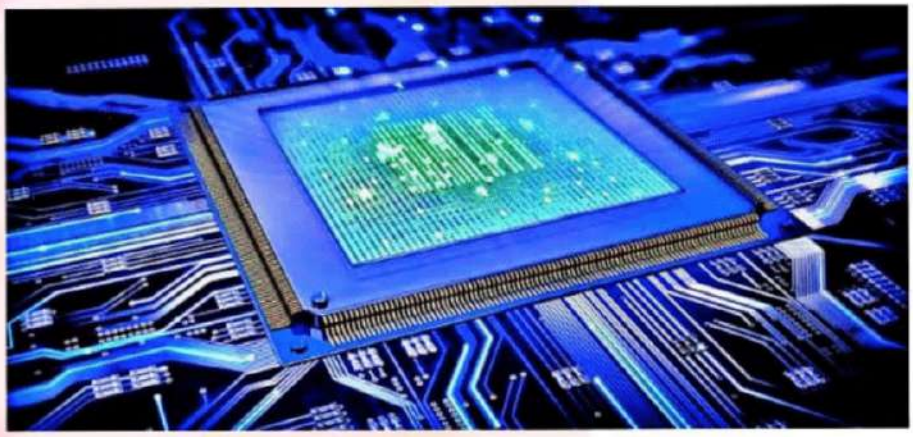
ELECTIVE I & II
Subjects:
1. Wireless And Mobile Communication
2. Virtual Instrumentation
3. Embedded Processor Development
4. Automotive Embedded System
5. Intelligent Control and Automation
6. Unmanned Aerial Vehicle
7. DSP Based System Design
8. Machine Learning and Deep Learning

SEMESTER III

ELECTIVE III, IV & V
Subjects:
1. Computer Vision
2. Multimedia Communication
3. Embedded Networking and Automation of Electrical System
4. Smart System Design
5. Embedded Computing
6. Embedded Systems Security
7. Robotics and Automation
8. Reconfigurable Processor and SoC Design
9. MEMS and NEMS Technology
10. Entrepreneurship and Embedded Product Development
11. Embedded System for Biomedical Applications
12. Renewable Energy and Grid Integration
13. Electric Vehicles and Power Management
14. Python Programming for Machine Learning
15. Smart Grid









Embedded System Technology Programme Outcomes:

Learning Embedded System Technology can help students

- To build a strong skill set useful to the roles of Data Engineer, Mechanical Engineer, Electrical Engineer, Software developer etc.
- To develop and maintain applications written using Embedded C.
- To develop Embedded Systems based smart solutions for the purpose of system automation.
- An ability to independently carry out research, investigation and development work to solve practical problems.

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