

Program Curriculum

M.Tech in Electronics Engineering

Project driven learning with flexible course selection. Research, innovation and development driven curriculum.

M.Tech in Electronics Engineering with specialization in

(A) *AI Hardware*

(B) *Signal Processing and Automation*

AI hardware

After undertaking the specialization in AI hardware you will excel in:

- circuit design and physical design
- electronic system design and PCB
- AI algorithms, FPGA and hardware systems
- using various design tools such as Mentor graphics, Labview, Matlab, comsol, python
- applications in deep learning, quantum computing, IOT and cyber physical systems

You find job as: AI chip designer, Analog circuit designer, Verification engineer, Edge AI architect, AI engineer, Deep learning engineer, system integration engineer, entrepreneur, PhD student etc

Signal Processing and Automation

After undertaking the specialization in Signal Processing and Automation you will excel in:

- DSP and FPGA programming
- Signal processing and real time system design
- AI algorithms, cyber physical systems and industry 4.0
- using various design tools such as Labview, Matlab, python
- Applications in image processing, medical imaging, industrial automation, speech and sensor processing

You find job as: Embedded system engineer, signal processing engineer, computer vision scientist, image processing engineer, AI specialist, biomedical engineer, entrepreneur, PhD student etc

Semester-wise list of courses

M.Tech in Electronics Engineering					
Semester 1 (30 Credits)					
Course Code	Course Name	Course level	Credit Split	Specialization	Core/Elective
MCC01	Digital Access for Community Empowerment (DACE)	300	3 (project)	AI hardware/Signal Processing	University Core;
MCC02-EE	Digital Experience Laboratory (DEL)	300	4 (Lab)	AI hardware/Signal Processing	University Core
MCC03	Design Thinking and Innovation (DTI)	300	3 (Lecture)	AI hardware/Signal Processing	University Core
MAIH301	Non-linear Circuit Theory	300	3 (Lecture) 2 (project)	AI hardware	Program Core (Research focussed)
MAIH302, MSPA302	Electronics for Edge AI	300	3 (Lecture), 2 (Lab)	AI hardware/Signal Processing	Program Core (Industry focussed)
MAIH303, MSPA303	Sensors for Drones and Robotics	300	3 (Lecture) 2 (project)	AI hardware/Signal Processing	Program Core (Research focussed)
MAIH304	ASIC Physical Design	300	1 (Lecture), 4 (Lab)	AI hardware	Program Core (Industry focussed)
MSPA305	Foundations of Signal Analysis	300	3 (Lecture) 2 (project)	Signal Processing	Program Core (Research focussed)
MSPA306	Programming with DSP	300	5 (Lab)	Signal Processing	Program Core (Industry focussed)
IEC001	Industry Experience Competency	300	5 (Project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
Semester 2 (25 credits)					
MAIH308, MSPA308	Mini-Project and Internship	300	6 (Project)	AI hardware/Signal Processing	Program Core (Industry focussed)
MAIH309	Digital Chip Design and Verification with Hardware Programming	300	3 (Lecture) 2(Lab)	AI hardware	Program Core (Industry focussed)

IEC002	Industry Experience Competency	300	5 (Project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MSPA310	Sparse signals and Compressed Sensing	300	3 (Lecture), 2(Lab)	Signal Processing	Program Core (Research focussed)
MAIH312, MSPA312	AI System Analysis and Design	300	3 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)
MAIH312L, MSPA312L	AI System Analysis and Design Lab	300	4 (Lab)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH313, MSPA313	Digital Manufacturing and Virtual Reality	300	3 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)
MAIH313P, MSPA313P	Digital Manufacturing and Virtual Reality (Project)	300	4 (project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH314, MSPA314	NEMS/MEMS and Systems	300	3 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)
MAIH314L, MSPA314L	NEMS/MEMS and Systems Lab	300	4 (Lab)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH315, MSPA315	Signal Decomposition & Recovery	300	3 (Lecture)	AI hardware/ Signal Processing	Program Elective (Research focussed)
MAIH315P, MSPA315P	Signal Decomposition & Recovery (Project)	300	4 (project)	AI hardware/ Signal Processing	Program Elective (Industry focussed)
MAIH316, MSPA316	Robotics and Industrial Automation 4.0	300	3 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)
MAIH316P, MSPA316P	Robotics and Industrial Automation 4.0 (Project)	300	4 (project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH318, MSPA318	Quantum Computers and Applications	300	3 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)

MAIH318P, MSPA318P	Quantum Computers and Applications (Project)	300	4 (project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH319P, MSPA319P	Intelligent IOT and Sensor Manufacturing	300	4 (project)	AI hardware/Signal Processing	Program Elective (Industry focussed)
MAIH320P, MSPA320P	Digital Twins for AI Hardware	300	4 (project)	AI hardware	Program Elective (Industry focussed)
MAIH321P, MSPA321P	Artificial General Intelligence and Robotics	300	4 (Lecture)	AI hardware/Signal Processing	Program Elective (Research focussed)
Semester 3 (45 credits)					
MAIH401	Research Topics in AI Hardware	400	20 (Research)	AI hardware	Program Core (Research focussed)
MSPA402	Research Topics in Signal Processing and Automation	400	20 (Research)	Signal Processing	Program Core (Research focussed)
MAIH404/ MSPA404	Master Thesis	400	24 (Project) 6 (Seminar)	AI hardware/Signal Processing	Program Core (Research or Industry focussed)

Course Selection and flexibility

We believe that each student is different, and has different interests and learning ability. Students get a chance to self discover their interest and fine tune their skills throughout the program through several projects and case studies.

The students select the courses in discussion with the faculty advisor assigned to them every semester. The credits from online courses such as through swayam can be transferred as per the limits specified by UGC and that by the university regulations. Students are also encouraged to take courses from other schools to broaden their horizon of knowledge. Interdisciplinary works and thinking out of the box are encouraged. At the same time, high quality standards are maintained in all the courses offered by the school.