

M.Tech./M.Des Programme

Programme/Discipline	Specialization
M.Tech. in ECE	Power and Control
	Microwave and Communication Engineering
	Micro-nano Elc.
M.Tech. in ME	CAD/CAM
	Design
	Manufacturing
M.Tech. in CSE	No
M.Tech. in Mechatronics	No
M.Des.	No

M.Tech. in ECE
(Power and Control)
Course Structure

Semester I			
S.No.	Course No.	Course Title	Credits
1.	HS501	Professional and Communication Skills (compulsory)	1-0-2-2
2.	EC521	Special topics in Power and Control Systems (core1)	3-0-0-4
3.	EC522	Power Electronics and Drives (core2)	3-0-0-4
4.	MT612	PLC and Microcontroller (Core3)	2-0-4-5
5.		Elective 1	3-0-0-4
6.	MT612L	Lab is attached to course Core3	--
Semester II			
1.	EC523	System Design: Power and Control (core4)	3-0-2-5
2.		Elective 2	3-0-0-4
3.		Elective 3	3-0-0-4
4.	EC699a	Thesis/Elective 4	3-0-0-4
5.	EC523L	Lab is attached to course core4	--
Semester III			
1.	EC598a	Graduate Seminar I	2
2.	EC699a	M.Tech. Dissertation	16
Semester IV			
1.	EC599b	Graduate Seminar II	2
2.	EC699b	M.Tech. Dissertation	16

Electives:

Sl No	Course No	Courses	Credits
1.	EC524	Optimal Control	3-0-0-4
2.	ES306	Optimization Techniques	3-0-0-4
3.	EC526	Intelligent Systems and Control	3-0-0-4
4.	EC525	Control Techniques In Power Electronics	3-0-0-4
5.	EC602	Application of Signal and Image processing	3-0-0-4
6.	EC603	Power Electronics Applications In Power Systems	3-0-0-4
7.	EC604	Simulation of Modern Power Systems	3-0-2-5
8.	EC511	Advanced Digital Signal Processing	3-0-0-4
9.	EC527	Robust Control Systems	3-0-0-4
10.	EC529	Modelling and Simulation of Power Electronic Systems	3-0-0-4
11.	EM661	Fuzzy logic and its application	2-0-0-2
12.	EM528	Simulation of Power Systems	2-0-1-2

M.Tech. in ECE
(Microwave and Communication Engineering)

Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional and Communication Skill	1-0-2-2
2.	EC651	Core1: Advanced Communication Engineering	3-0-0-4
3.	EC533	Core2: Computational Electromagnetics	3-0-0-4
4.	EC638	Core3: RF and Microwave Circuits Design	3-0-0-4
5.		Elective I	3-0-0-4
6.	EC638L	Lab1: High Frequency Circuits Design Lab	0-0-3-2
Semester II			
1.	EC512	Core 4: Multirate signal processing	3-0-0-4
2.	EC551	Core 5: Photonics Communication	3-0-0-4
3.		Elective 2	3-0-0-4
4.		Elective 3	3-0-0-4
5.	EC552L	Lab 2: Advanced Communication Engg. Lab	0-0-3-2
Semester III			
1.	EC598a	Graduate Seminar 1	2
2.	EC699a	Thesis Credit	16
Semester IV			
1.	EC598b	Graduate Seminar 2	2
2.	EC699b	Thesis Credit	16

Electives

Sl. No	Course No	Course Name	Credits
1.	NS531	Advanced Engineering Mathematics	3-0-0-4
2.	EC616	Industrial Microwave	3-0-0-4
3.	EC535	Advanced Antenna Theory and Design	3-0-0-4
4.	EC615	MMIC and RFIC Design	3-0-0-4
5.	EM666e	RF MEMS Design	3-0-0-4
6.	EC635	Nano-Photonics and Plasmonics	3-0-0-4
7.	EC612a	RF and Microwave Active Circuits	3-0-0-4
8.	EC535	Electromagnetic Interference and Compatibility	3-0-0-4
9.	EC534	Advanced Engineering Electromagnetics	
10.	EC552	Radar Communication	3-0-0-4
11.	EC553	Optical and Satellite Communication	3-0-0-4
12.	EC554	Wireless Mobile Communication	3-0-0-4
13.	EC555	Selected Topics in Wireless Communication	3-0-0-4
14.	EC652	Information Theory and Coding	3-0-0-4
15.	EC556	Detection and Estimation Theory	3-0-0-4
16.	EC636	Wavelet and Filter Banks	3-0-0-4
17.	EC637	Digital Signal Compression	3-0-0-4
18.	EC639	Advanced Digital Filter Design	3-0-0-4
19.	EC624	Adaptive Signal Processing	3-0-0-4
20.	EM609d	Biomedical Signal Processing	2-0-0-1
21.	EC501	Wavelet Transform and Applications	3-0-0-4
22.	EC625	Signal Processing for Communication	3-0-0-4
23.	EC511	Advanced Digital Signal Processing	3-0-0-4
24.			

M.Tech. in ECE
(Micro and Nano-Electronics)
Course Structure

Semester I			
S.No.	Course No.	Course Title	Credits
1.		Professional and Communication Skills (Compulsory)	2-0-0-2
2.	EC541	Physics of Semiconductor Devices (core1)	3-0-2-5
3.	EC544	Digital VLSI Design (core2)	3-1-0-4
4.	EC545	Device Fabrication Technology (Core3)	3-1-0-4
5.		Elective I	3-0-0-3
6.	EC546L	Lab1 (attached to Core1) (TCAD)	--
Semester II			
1.	EC541	Analog IC Design (core4)	3-1-0-4
2.		Elective II	3-1-0-4
3.		Elective III	3-1-0-4
4.		Elective IV/ Thesis Credit	3-1-0-4
5.	EC547L	Lab2 (EDA Tool)	0-0-4-2
Semester III			
1.	EC699a	Thesis Credit	16
2.	EC598a	Graduate Seminar I	2
Semester IV			
1.	EC699b	Thesis Credit	16
2.	EC598b	Graduate Seminar II	2

Elective-I:

SI No	Course No	Courses	Credits
1.	EC543	CMOS memory Design	3-0-0-3
2.	EC545a	VLSI Device and Modeling	3-0-0-3
3.	EC545b	VLSI Design Automation	3-0-0-3

Elective-II:

SI No	Course No	Courses	Credits
1.	EC548a	Testing and diagnosis of Digital systems	3-1-0-4
2.	EC548b	Low power VLSI Design	3-1-0-4
3.	EC548	CMOS/RF IC Design	3-1-0-4

Elective-III:

SI No	Course No	Courses	Credits
1.	EC549a	Advanced micro and nano Devices/Nanoelectronics	3-1-0-4
2.	EC549b	MEMS/NEMS and Sensors	3-1-0-4

Elective-IV:

SI No	Course No	Courses	Credits
1.	EC550	Nano Scale Integrated Computing	3-1-0-4

Note: Students may opt an elective offered by other specialization/discipline related to his/her field of interest with the prior permission of Instructor-in-Charge/Supervisor, as the case may be.

M.Tech. in CSE

Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional and Communication Skills	1-0-2-2
2.	CS531	Mathematics for Computer Science (Compulsory)	3-0-0-4
3.	CS532	Advanced Algorithms (Compulsory)	3-0-0-4
4.		Elective I	3-0-0-4
5.		Elective II	3-0-0-4
6.			
Semester II			
1.		Elective III	3-0-0-4
2.		Elective IV	3-0-0-4
3.		Elective V	3-0-0-4
4.	CS699	M.Tech Thesis	4
Semester III			
1.	CS598	Graduate Seminar I	2
2.	CS699	M.Tech Thesis	16
Semester IV			
1.	CS599	Graduate Seminar II	2
2.	CS699	M.Tech Thesis	16

Electives

1.	CS415	Machine Learning	3-0-0-4
2.	CS608	Mobile and Wireless Network	3-0-0-4
3.	CS416	Advanced Computer Architecture	3-0-0-4
4.	CS631	Parallel Algorithms	3-0-0-4
5.	CS509	Software Modeling: Techniques and Tools	3-0-0-4
6.	CS510	Advance Cryptography and Network Security	3-0-0-4
7.	EC611	Image Processing	3-0-0-4
8.	CS501	Biometrics	3-0-0-4
9.	CS506	Image Retrieval	3-0-0-4
10.	CS504	Object-Oriented Software Engineering	3-0-0-4
11.	CS607	Cryptography and Network Security	3-0-0-4
12.	EC612	Pattern Recognition	3-0-0-4
13.	CS505	Advanced Topics in Software Engineering	3-0-0-4
14.	CS508	Software Testing	3-0-0-4

Electives in Modular form

1.	EM601d	Parallel Processing	1-0-0-1
2.	EM604b	Dependable Computing	1-0-0-1
3.	EM675d	Multimedia Information Processing	1-0-0-1
4.	EM601g	Data Engineering	1-0-0-1
5.	EM674a	Visual Cryptography	1-0-0-1
6.	EM668d	Empirical Software Engineering	1-0-0-1
7.	EM605f	Coding Theory	1-0-0-1
8.	EM606b	Introduction to Data Mining and Big Data Analysis	1-0-0-1
9.	EM669b	Pattern Recognition	1-0-0-1
10.	EM675a	Geometric Transforms and Motion Analysis	1-0-0-1

11.	EM675b	Document Image Processing and Compression	1-0-0-1
12.	EM608a	Modeling and Simulation	1-0-0-1
13.	EM675c	Fundamentals of Image Reconstruction	1-0-0-1
14.	EM601f	Data Mining	1-0-0-1
15.	EM606b	Introduction to Data Mining and Big Data Analysis	1-0-0-1
16.	EM664h	Network Computing	1-0-0-1
17.	EM605a	Network Flows and Matching	1-0-0-1
18.	EM605b	NP Completeness and Approximation Algorithms	1-0-0-1
19.	EM605e	Graph Algorithms	1-0-0-1
20.	EM667a	Neural Networks	1-0-0-1
21.	EM604c	Distributed Computing using Hadoop	1-0-0-1
22.	EM607a	Design of Extensible Applications in Java	1-0-0-1
23.	EM604a	Introduction to Cloud Computing	1-0-0-1
24.	EM 605d	Path Planning Algorithms	1-0-0-1
25.	EM603b	Compiler Optimizations	1-0-0-1
26.	EM663b	Introduction to Functional Programming	1-0-0-1
27.	EM669b	Computer Vision	1-0-0-1
28.	EM673a	Biometrics	1-0-0-1

M.Tech. in ME
(CAD/CAM)
Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional and Communication Skills	1-0-2-2
2.	ME640	Analytical Methods in Engineering (Compulsory)	3-0-0-4
3.	ME601	Computer Aided Geometric Design	3-0-0-4
4.	ME655	NC-CNC Machine Tools and Programming	2-0-2-4
5.		Elective I	3-0-0-4 / 2-0-2-4
6.	ME590	Geometric Modeling Lab (GML) (Compulsory)	0-0-2-2
Semester II			
1.		Elective II	3-0-0-4 / 2-0-2-4
2.		Elective III	3-0-0-4 / 2-0-2-4
3.		Elective IV	3-0-0-4 / 2-0-2-4
4.	ME591	Geometric Programming Lab (GPL) (Compulsory)	0-0-2-2
5.	ME699	M.Tech Thesis	0-0-0-4
Semester III			
3.	ME598	Graduate Seminar I	4
4.	ME699	M.Tech Thesis	16
Semester IV			
3.	ME599	Graduate Seminar II	4
4.	ME699	M.Tech Thesis	16

Electives

1.	ME631	Computer Aided Geometric Design	3-0-0-4
3.	ME 613	Engineering Optimization	3-0-0-4
4.	ME309a	Finite Element Methods	3-0-0-4
5.	ME652	Computational Fluid Dynamics	3-0-0-4
6.	ME 656	Rapid Product Development Technologies	3-0-0-4
7.	ME417b	Advanced Manufacturing Processes and Technologies	3-0-0-4
9.	ME411g	Computer Integrated Manufacturing Systems	3-0-0-4
14.	ME501	Micro Electromechanical Systems (MEMS)	3-0-0-4
19.	ME420	Metal Forming	3-0-0-4
20.	EC661	Fuzzy Logic and Neural Networks	3-0-0-4
21.	ME422a	Smart Materials and Structures	3-0-0-4

M.Tech. in ME
(Design)
Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
7.	HS501	Professional and Communication Skills	1-0-2-2
8.	ME640	Core1: Analytical Methods in Engineering	3-0-0-4
9.	ME418a	Core 2: Advanced Mechanics of Solids	3-0-0-4
10.	ME417a	Core 3: Mechanical Vibrations and Condition Monitoring	3-0-0-4
11.		Elective I	3-0-0-4
12.	ME592	Design Lab I	0-0-3-2
Semester II			
6.	ME617	Core 4: Finite Element for Mechanical Engineering	3-0-0-4
7.		Elective I	3-0-0-4
8.		Elective II	3-0-0-4
9.		Elective III	3-0-0-4
10.	ME593	Design Lab II	0-0-3-2
Semester III			
5.	ME598	Graduate Seminar I	4
6.	ME699	M.Tech Thesis	16
Semester IV			
5.	ME599	Graduate Seminar II	4
6.	ME699	M.Tech Thesis	16

Electives

2.	ME603	Industrial robotics	3-0-0-4
3.	ME422b	Fault Diagnosis and Prognosis of Engineering Systems	3-0-0-4
5.	MT503	Sensor and Actuators	3-0-0-4
7.	ME313c	Computer aided Design	3-0-0-4
8.	ME656	Rapid Product Development Technologies	3-0-0-4
9.	EC613	Engineering Optimization	3-0-0-4
13.	EC661	Fuzzy logic and Neural Networks	3-0-0-4
14.	ME307b	Computational Fluid Dynamics	3-0-0-4
16.	ME422a	Smart Materials and Structures	3-0-0-4
20.	ME419b	Fatigue and Fracture	3-0-0-4
21.	ME501	Micro Electromechanical Systems(MEMS)	3-0-0-4
35.	ME419c	Fracture Mechanics	3-0-0-4

M.Tech. in ME
(Manufacturing)
Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional and Communication Skills	1-0-2-2
2.	ME640	Analytical Methods in Engineering (Compulsory)	3-0-0-4
3.	ME631	Manufacturing Science (Compulsory)	3-0-0-4
4.		Elective II **	3-0-0-4 / 2-0-2-4
5.		Elective I	3-0-0-4 / 2-0-2-4
6.	ME594	Manufacturing Processes Lab I (Compulsory)	0-0-2-2
Semester II			
11.	ME309e	Advanced Manufacturing Processes (Compulsory)	
12.		Elective III	
13.		Elective IV	
14.	ME595	Manufacturing Processes Lab II (Compulsory)	
15.	ME699	M.Tech Thesis	4
Semester III			
7.	ME598	Graduate Seminar I	4
8.	ME699	M.Tech Thesis	16
Semester IV			
7.	ME599	Graduate Seminar II	4
8.	ME699	M.Tech Thesis	16

List of Elective Courses

1		Metal Forming	3-0-0-4
6	EM6823a	Supply Chain Management	3-0-0-4
7		Materials Management	3-0-0-4
10	ME310	Computer Aided Design	3-0-0-4
11	ME309c	Computer Integrated manufacturing System	3-0-0-4
12	ME655	NC-CNC Machine Tools and Programming	3-0-0-4
14	ME656	Rapid Product Development Technology	3-0-0-4
19	ME309a	Finite Element Methods	3-0-0-4
20	ME603	Industrial Robotics	3-0-0-4
21	EC613	Engineering Optimization	3-0-0-4
23	ME657	Design of Experiments	3-0-0-4
24	ME	Micro Electro Mechanical System	3-0-0-4
25	EM641a	Computational Fluid Dynamics	3-0-0-4

M.Tech. in Mechatronics

Course Structure

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional Communication Skills	1-0-2-2
2.		Analytical Methods in Engineering	3-0-0-4
3.	MT501/M T502	Concepts in Mechanical Systems (for ECE and CSE students) Or Concepts in Electronic Devices (for Mechanical Students)	3-0-0-4
	MT503	Sensors and Actuators	3-0-2-4
4.	MT504	Systems and Control	3-0-2-4
Semester II			
1.		Elective I	3-0-0-4
2.		Elective II	3-0-0-4
3.		Elective III	3-0-0-4
4.		Graduate Seminar I	0-0-3-2
5.	MT595	Mini Project	0-0-6-4
Semester III			
1.		Graduate Seminar II	2
2.	MT699	M.Tech Thesis	12
3.			
Semester IV			
1.	MT699	M.Tech Thesis	18

Electives

1.	MT612	PLC and Microcontroller	
2.	EC661	Fuzzy logic and Neural Networks	
3.	ME652	Computational Fluid Dynamics	
4.	EC522	Power Electronics and Drives	
5.	ME309c	Computer Integrated Manufacturing	

M.Des. in Design**Course Structure**

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501	Professional Communication Skills	2-0-0-2
2.	DS531	Elements and Principles of Design	2-0-2-4
3.	DS532	Ergonomics for Industrial Design	2-0-2-4
4.	DS533	Art & Aesthetics in Design	2-0-2-4
5.	DS541	Product Design-I	2-0-2-4
6.	DS559	Visual Design I	2-0-2-4
7.	DS576	Design Workshop – I	0-0-3-4
Semester II			
1.	DS 535	Design Science(Senate approval pending)	2-0-2-4
2.	DS 542	Product Design-II OR	2-0-2-4
3.	DS 559	Visual Design-II OR	2-0-2-4
4.	DS 571	Interactive Design	2-0-2-4
5.	DS 544	Materials and Process in Design(Senate approval pending)	2-0-2-4
6.	DS 560	Design Thinking(Senate approval pending)	2-0-2-4
7.	DS 577	Design Workshop -II	0-0-3-4
8.	DS 583	Strategic Design Management(Senate approval pending)	2-0-2-4
9.	DS 598	Seminar-I based on Problem Definition, Need Identification and Literature Review of thesis(Senate approval pending)	2
Semester III			
1.	DS 600	Design Project(Technically Complex Project of System) (Senate approval pending)	0-0-16-8
2.		Any TWO of the following	
3.	DS 534	Culture and Design	2-0-2-4
4.	DS543	Product Detailing((Senate approval pending)	2-0-2-4
5.	DS 557	Video and Animation Design	2-0-2-4
6.	DS 566	Applied Ergonomics OR	2-0-2-4
7.	DS 558	Visual Ergonomics	2-0-2-4
8.	DS 582	Sustainable Design	2-0-2-4
9.	DS 584	Design Styling and Trend Forecast	2-0-2-4
10.		EMF's Any TWO of the following	
11.	EM 592h	Medical Equipment Design	3-0-0-1
12.	EM 592k	Product Design in Electronics	3-0-0-1
13.	EM 593h	Typography(Senate approval pending)	3-0-0-1
14.	EM 593i	Photography(Senate approval pending)	3-0-0-1
15.	EM 595c	Information Design(Senate approval pending)	3-0-0-1
16.	EM 598c	Packaging and Branding(Senate approval pending)	3-0-0-1
17.	*DS 596	Summer Internship	2
18.	DS 699	MDes Thesis	4
Semester IV			
1.	DS 599	Seminar II(Senate approval pending)	2
2.	DS 699	MDes Thesis	16