



**PDPM INDIAN INSTITUTE OF INFORMATION
TECHNOLOGY, DESIGN & MANUFACTURING
JABALPUR**

**M.Tech Curriculum
Structure (Minimum credit 70)**

SEMESTER-I		
Courses	Credits	
Professional and Communication Skill**	2 (S or X)	1-0-2-2
Core	4	3-0-0-4
Core	4 or 5(if Lab attached)	3-0-2-5 or 3-0-0-4
Core / Elective	4	3-0-0-4
Elective	4	3-0-0-4
Lab1*/ lab attached to a course	*2/ attached with course	0-0-2-2
SEMESTER-II		
Courses	Credits	
Core / Elective	4 or 5(if Lab attached)	3-0-2-5 or 3-0-0-4
Elective	4	3-0-0-4
Elective	4	3-0-0-4
Elective or thesis credit	4	3-0-0-4
Lab1/ lab attached to a course	*2/ attached with course	0-0-2-2
SEMESTER-III		
Courses	Credits	
Thesis Credit	16	16
Graduate Seminar I	2	2
SEMESTER-IV		
Courses	Credits	
Thesis Credit	16	16
Graduate Seminar II	2	2

* Either lab will be attached to a core course or separate lab will be conducted

** The course can be floated either in 1st or 2nd Semester

COMPUTER SCIENCE ENGINEERING

M.Tech. in CSE

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501(Core)	Professional and Communication Skills	1-0-2-2
2.	CS531(Core)	Mathematical Foundations of Computer Science	3-0-0-4
3.	CS532(Core)	Algorithms	3-0-2-5
4.	Elective I	-	3-0-0-4
5.	Elective II	-	3-0-0-4
6.	CS532L	Lab Attached with CS532(Core)	
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
5.	CS533	Lab 2 (Data Analytics Lab)	0-0-2-2
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.	CS534	Research Methods in Computer Science	3-0-0-4
2.	CS601	Game Theory and Networks	3-0-0-4
3.	CS602	Social Network Analysis	3-0-0-4
4.	CS603	Queueing Theory	3-0-0-4
5.	CS604	Model Thinking	3-0-0-4
6.	CS608	Mobile and Wireless Networks	3-0-0-4
7.	CS609	Wireless Sensor Networks	3-0-0-4
8.	CS615	Machine Learning	3-0-0-4
9.	CS616	Pattern Recognition	3-0-0-4
10.	CS617	Basics of Deep Learning	3-0-0-4
11.	CS618	Soft Computing	3-0-0-4
12.	CS619	Data Mining and Data Warehousing	3-0-0-4
13.	CS620	Natural Language Processing	3-0-0-4
14.	CS621	Image Processing	3-0-0-4
15.	CS622	Computer Vision	3-0-0-4
16.	CS623	Multimedia Processing	3-0-0-4
17.	CS624	Medical Image Processing	3-0-0-4
18.	CS625	Biometric Technologies and Applications	3-0-0-4
19.	CS626	Content Based Image Retrieval	3-0-0-4
20.	CS627	Image Reconstruction	3-0-0-4
21.	CS631	Parallel Algorithms	3-0-0-4
22.	CS632	Advanced Algorithms	3-0-0-4
23.	CS633	Approximation Algorithms	3-0-0-4
24.	CS634	Randomized Algorithms	3-0-0-4
25.	CS635	Computational Geometry	3-0-0-4
26.	CS636	Optimization Theory and Applications	3-0-0-4

27.	CS637	Mesh Free Computations	3-0-0-4
28.	CS641	Principles of Programming Languages	3-0-0-4
29.	CS642	Object Oriented Analysis and Design	3-0-0-4
30.	CS651	Fuzzy Sets, Logic and Applications	3-0-0-4
31.	CS652	Statistical Methods in Computer Science	3-0-0-4
32.	CS653	Artificial Intelligence	3-0-0-4
33.	CS654	Big Data Analytics	3-0-0-4
34.	CS655	Cloud Computing	3-0-0-4
35.	CS656	Basic of Bioinformatics	3-0-0-4
36.	CS671	Quantitative Methods in Software Engineering	3-0-0-4
37.	CS672	Software Testing and Quality Assurance	3-0-0-4
38.	CS673	Human Computer Interaction	3-0-0-4
39.	CS674	Distributed Systems	3-0-0-4
40.	CS681	Coding Theory	3-0-0-4
41.	CS682	Cyber Security	3-0-0-4
42.	CS683	Visual Cryptography and Data Hiding	3-0-0-4
43.	CS684	Cryptography and Network Security	3-0-0-4
44.	CS691	Advanced Computer Architecture	3-0-0-4

Electives in Modular form

1.	EM601a	Advanced Topics in Computer Architecture	2-0-0-2
2.	EM601d	Parallel Processing	1-0-0-1
3.	EM601h	Dependable Computing	1-0-0-1
4.	EM602d	Artificial Intelligence and its Applications	1-0-0-1
5.	EM602e	Bayesian Classifiers	2-0-0-2
6.	EM605f	Coding Theory	1-0-0-1
7.	EM605h	Network Flow Optimization	2-0-0-2
8.	EM605i	External Memory Algorithms	2-0-0-2
9.	EM607a	Design of Extensible Application in Java	1-0-0-1
10.	EM608a	Modelling and Simulation	1-0-0-1
11.	EM608b	Graphical Models	2-0-0-2
12.	EM609b	Public Key Cryptography	1-0-0-1
13.	EM609c	Speech and Music Signal Processing	1-0-0-1
14.	EM609e	Cyber Security	1-0-0-1
15.	EM609g	Computational Number Theory and Cryptography	2-0-0-2
16.	EM609h	Elementary Number Theory	2-0-0-2
17.	EM668g	Software Quality Assurance	1-0-0-1

ELECTRONICS AND COMMUNICATION ENGINEERING

M.Tech. in ECE (Power and Control)

Semester I			
S.No.	Course No.	Course Title	Credits
1.	HS501 (Core)	Professional and Communication Skills	1-0-2-2
2.	EC521(Core)	Special topics in Power and Control	3-0-0-4
3.	EC522(Core)	Power Electronics and Drives	3-0-0-4
4.	MT612(Core)	PLC and Microcontroller	2-0-4-5
5.	Elective 1	-	3-0-0-4
6.	MT612L	Lab is attached to course MT612(Core)	--
Semester II			
1.	EC523(Core)	System Design: Power and Control	3-0-2-5
2.	Elective 2	-	3-0-0-4
3.	Elective 3	-	3-0-0-4
4.	EC699a	Thesis	3-0-0-4
5.	EC523L	Lab is attached to course EC523(Core)	--
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	EC604	Simulation of Modern Power Systems	3-0-0-4
2	EC661	Fuzzy Logic & Neural Networks	3-0-0-4
3	EC511	Advanced Digital Signal processing	3-0-0-4
4	EC422b	Applications of Signal and Image Processing	3-0-0-4
5	EC 513	Advance(d) time frequency analysis	3-0-0-4
6	EC512	Multirate Signal Processing	3-0-0-4

Electives in modular form:

1	EM661	Fuzzy logic and its application	2-0-0-2
2	EM528	Simulation of Power Systems	2-0-1-2

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

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501(Core)	Professional and Communication Skill (HS501)*	1-0-2-2
2.	EC651(Core)	Advanced Communication Engineering	3-0-0-4
3.	EC533(Core)	Computational Electromagnetics	3-0-0-4
4.	EC638(Core)	RF and Microwave Circuits Design	3-0-2-5
5.	Elective I		3-0-0-4
6.	EC638L	High Frequency Circuits Design (Attached with EC638)	0-0-2-2

Semester II			
Sl. No	Course No	Course Title	Credits
1.	EC512	Multirate signal processing (EC512)	3-0-0-4
2.	EC551	Photonics Communication (EC551)	3-0-0-4
3.	Elective 2	-	3-0-0-4
4.	Elective 3	-	3-0-0-4
5.	EC552L	Advanced Communication Lab	0-0-2-2

Semester III			
Sl. No	Course No	Course Title	Credits
1.	EC598a	Graduate Seminar 1	2
2.	EC699a	Thesis Credit	16

Semester IV			
Sl. No	Course No	Course Title	Credits
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.	EC635	Nano-Photonics and Plasmonics	3-0-0-4
6.	EC612a	RF and Microwave Active Circuits	3-0-0-4
7.	EC536	Electromagnetic Interference and Compatibility	3-0-0-4
8.	EC534	Advanced Engineering Electromagnetics	3-0-0-4
9.	EC552	Radar Communication	3-0-0-4
10.	EC554	Wireless Mobile Communication	3-0-0-4
11.	EC555	Selected Topics in Wireless Communication	3-0-0-4
12.	EC652	Information Theory and Coding	3-0-0-4
13.	EC556	Detection and Estimation Theory	3-0-0-4
14.	EC636	Wavelet and Filter Banks	3-0-0-4
15.	EC639	Advanced Digital Filter Design	3-0-0-4
16.	EC624	Adaptive Signal Processing	3-0-0-4

Electives in modular form:

1.	EM609d	Biomedical Signal Processing	1-0-0-1
2.	EM666e	RF MEMS Design	2-0-0-2

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

Semester I			
S.No.	Course No.	Course Title	Credits
	HS501 (Core)	Professional and Communication Skills	1-0-2-2
1.	EC541(Core)	Physics of Semiconductor Devices	3-0-2-5
2.	EC544(Core)	Digital VLSI Design	3-1-0-4
3.	EC545(Core)	Device Fabrication Technology	3-1-0-4
4.	Elective I	-	3-0-0-4
5.	EC546L	Lab attached to EC541(Core)	--
Semester II			
1.	EC541(Core)	Analog IC Design	3-0-0-4
2.	Elective II	-	3-1-0-4
3.	Elective III	-	3-1-0-4
4.	Elective IV	-	3-1-0-4
5.	EC547L	Lab2 (EDA Tool)	0-0-4-2
Semester III			
1.	EC598a	Graduate Seminar I	2
2.	EC699a	Thesis Credit	16
Semester IV			
1.	EC598b	Graduate Seminar II	2
2.	EC699b	Thesis Credit	16

Elective-I:

Sl No	Course No	Courses	Credits
1.	EC543	CMOS memory Design	3-0-0-4
2.	EC545a	VLSI Device and Modeling	3-0-0-4
3.	EC545b	VLSI Design Automation	3-0-0-4

Elective-II:

Sl 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:

Sl No	Course No	Courses	Credits
1.	EC549a	Advanced micro and Nano Devices/ Nano-electronics	3-1-0-4
2.	EC549b	MEMS/NEMS and Sensors	3-1-0-4

Elective-IV:

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

MECHANICAL ENGINEERING

M.Tech. in ME (CAD/CAM)

Semester I			
Sl. No	Course No	Course Title	Credits
1	HS501(Core)	Professional and Communication Skills	1-0-2-2
2	ME581(Core)	Analytical Methods in Engineering	3-0-0-4
3	ME589(Core)	Research Methodology	2-0-0-3
4	ME601(Core)	Computer Aided Geometric Design	3-0-0-4
5	Elective I	-	3-0-0-4
6	ME590L	Geometric Modeling Lab (GML)	0-0-2-2
Semester II			
1	ME611(Core)	NC-CNC Machine Tools and Programming	3-0-0-4
2	Elective II	-	3-0-0-4
3	Elective III	-	3-0-0-4
4	Elective IV	-	3-0-0-4
5	ME591L	Geometric Programming Lab (GPL)	0-0-2-2
Semester III			
1	ME598	Graduate Seminar I	2
2	ME699	M.Tech. Thesis	16
Semester IV			
1	ME599	Graduate Seminar II	2
2	ME699	M.Tech. Thesis	16

Electives

1.	ME612	Rapid Product Development Technologies	3-0-0-4
2.	ME615	Computer Integrated Manufacturing Systems	3-0-0-4
3.	ME535	Finite Element Methods for Mechanical Engineering	3-0-0-4
4.	ME636	Computational Fluid Dynamics	3-0-0-4
5.	ME642	Advanced Manufacturing Processes and Technologies	3-0-0-4
6.	ME651	Industrial Instrumentation & Metrology	3-0-0-4
7.	ME681	Engineering Optimization	3-0-0-4
8.	ME686	MEMS: Microfabrication and Application	3-0-0-4
9.	ME687	Smart Materials and Structures	3-0-0-4
10.	EC661	Fuzzy Logic and Neural Networks	3-0-0-4

Electives in Modular form (Common with CSE)

1.	EM601d	Parallel Processing	1-0-0-1
2.	EM601h	Dependable Computing	1-0-0-1
3.	EM602d	Artificial Intelligence and its Applications	1-0-0-1
4.	EM608a	Modelling and Simulation	1-0-0-1
5.	EM608b	Graphical Models	2-0-0-2
6.	EM609c	Speech and Music Signal Processing	1-0-0-1

M.Tech. in ME (Design)

Semester I			
Sl. No	Course No	Course Title	Credits
1	HS501(Core)	Professional and Communication Skills	1-0-2-2
2	ME581(Core)	Analytical Methods in Engineering	3-0-0-4
3	ME621(Core)	Advanced Mechanics of Solids	3-0-0-4
4	ME631(Core)	Mechanical Vibrations and Condition Monitoring	3-0-0-4
5	Elective I		3-0-0-4/2-0-0-3
6	ME592L	Design Lab I	0-0-3-2
Semester II			
1	ME535(Core)	Finite Element Methods for Mechanical Engineering	3-0-0-4
2	Elective II		3-0-0-4
3	Elective III		3-0-0-4
4	Elective IV		3-0-0-4
5	ME593L	Design Lab II	0-0-3-2
Semester III			
1.	ME598	Graduate Seminar I	2
2.	ME699	M.Tech Thesis	16
Semester IV			
1.	ME599	Graduate Seminar II	2
2.	ME699	M.Tech Thesis	16

Electives

1	ME589	Research Methodology	2-0-0-3
	ME601	Computer aided Geometric Design	3-0-0-4
2	ME612	Rapid Product Development Technologies	3-0-0-4
3	ME622	Fracture and Fatigue	3-0-0-4
4	ME623	Mechanics of Composite Laminates	3-0-0-4
5	ME624	Reliability of Mechanical Systems	3-0-0-4
6	ME632	Fault Diagnosis and Prognosis of Engineering Systems	3-0-0-4
7	ME636	Computational Fluid Dynamics	3-0-0-4
8	ME675	Thermal Aspects in Manufacturing	3-0-0-4
9	ME681	Engineering Optimization	3-0-0-4
10	ME685	Robotics and Intelligent Systems	3-0-0-4
11	ME686	Micro Electromechanical Systems (MEMS)	3-0-0-4
12	ME687	Smart Materials and Structures	3-0-0-4
13	EC661	Fuzzy logic and Neural Networks	3-0-0-4
14	MT603	Sensor and Actuators	3-0-0-4

Electives in Modular form (Common with CSE)

1.	EM601d	Parallel Processing	1-0-0-1
2.	EM601h	Dependable Computing	1-0-0-1
3.	EM602d	Artificial Intelligence and its Applications	1-0-0-1
4.	EM608a	Modelling and Simulation	1-0-0-1
5.	EM608b	Graphical Models	2-0-0-2
6.	EM609c	Speech and Music Signal Processing	1-0-0-1

M.Tech. in ME (Manufacturing)

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501 (Core)	Professional and Communication Skills	1-0-2-2
2.	ME581 (Core)	Analytical Methods in Engineering	3-0-0-4
3.	ME541 (Core)	Manufacturing Science	3-0-0-4
4.	ME589 (Core)	Research Methodology	2-0-0-3
5.	Elective I	-	3-0-0-4
6.	ME594L	Manufacturing Processes Lab I	0-0-3-2
Semester II			
1.	ME642 (Core)	Advanced Manufacturing Processes and Technologies	3-0-0-4
2.	Elective II	-	3-0-0-4
3.	Elective III	-	3-0-0-4
4.	Elective IV	-	3-0-0-4/2-0-0-3
5.	ME595L	Manufacturing Processes Lab II	0-0-3-2
Semester III			
1.	ME598	Graduate Seminar I	2
2.	ME699	M.Tech. Thesis	16
Semester IV			
1.	ME599	Graduate Seminar II	2
2.	ME699	M.Tech. Thesis	16

Electives:

1	ME601	Computer Aided Geometric Design	3-0-0-4
2	ME611	NC-CNC Machine Tools and Programming	3-0-0-4
3	ME612	Rapid Product Development Technology	3-0-0-4
4	ME615	Computer Integrated Manufacturing Systems	3-0-0-4
5	ME621	Advanced Mechanics of Solids	3-0-0-4
6	ME535	Finite Element Methods for Mechanical Engineering	3-0-0-4
7	ME636	Computational Fluid Dynamics	3-0-0-4
8	ME645	Metal Forming	3-0-0-4
9	ME646	Nanofinishing Science and Technology	2-0-0-3
10	ME651	Industrial Instrumentation & Metrology	3-0-0-4
11	ME681	Engineering Optimization	3-0-0-4
12	ME685	Robotics and Intelligent Systems	3-0-0-4
13	ME686	Micro Electro Mechanical Systems	3-0-0-4
14	ME675	Thermal Aspects in Manufacturing	3-0-0-4

Electives in Modular form (Common with CSE)

1.	EM601d	Parallel Processing	1-0-0-1
2.	EM601h	Dependable Computing	1-0-0-1
3.	EM602d	Artificial Intelligence and its Applications	1-0-0-1
4.	EM608a	Modelling and Simulation	1-0-0-1
5.	EM608b	Graphical Models	2-0-0-2
6.	EM609c	Speech and Music Signal Processing	1-0-0-1

MECHATRONICS

M.Tech. in Mechatronics

Semester I			
Sl. No	Course No	Course Title	Credits
1.	HS501(Core)	Professional Communication Skills	1-0-2-2
2.	ME581(Core)	Analytical Methods in Engineering	3-0-0-4
3.	MT501/MT502(Core)	Concepts in Mechanical Systems (for ECE and CSE students) Or Concepts in Electronic Devices (for Mechanical Students)	3-0-0-4
4	MT503 (Core)	Sensors and Actuators	3-0-2-5
5	Elective I		
4.	MT504L	Mechanical or Electronics Lab	0-0-2-2
Semester II			
1.	MT612(Core)	PLC and Microcontroller	3-0-2-5
2.	Elective II		3-0-0-4
3.	Elective III		3-0-0-4
4.	MT595	Mini Project	0-0-6-4
5.	MT612L	Lab is attached to course MT612(Core)	--
Semester III			
1.	MT598	Graduate Seminar II	2
2.	MT699	M.Tech Thesis	16
Semester IV			
1.	MT599	Graduate Seminar II	0-0-0-2
2.	MT699	M.Tech Thesis	16

Electives

1.	MT688	Automobile Electronics and Control	3-0-0-4
2.	ME535	Finite Element Methods for Mechanical Engineering	3-0-0-4
3.	EC 522	Power Electronics and Drives	3-0-0-4
4.	EC 422b	Application of Signal and Image Processing	3-0-0-4
5.	ME682	Robotics and Intelligent Systems	3-0-0-4
6.	EC 661	Fuzzy logic and Neural Networks	3-0-0-4
7.	ME687	Smart Materials and Structures	3-0-0-4
8.	ME686	MEMS: Microfabrication and Application	3-0-0-4
9.	EC420a	Advanced Control Systems	3-0-0-4
10.	ME651	Industrial Instrumentation and Metrology	3-0-0-4
11.	EC 551	Photonics Communication	3-0-0-4
12.	EC 407b	Internet of Things	3-0-0-4
13.	EC 553	Computational Electromagnetics	3-0-0-4
14.	ME612	Rapid Product Development Technologies	3-0-0-4
15.	ME636	Computational Fluid Dynamics	3-0-0-4
16.	ME611	NC-CNC Machine Tools and Programming	3-0-0-4
17.	ME631	Mechanical Vibrations and Condition Monitoring	3-0-0-4
18.	ME681	Engineering Optimization	3-0-0-4
19.	EC 549b	MEMS/NEMS and Sensors	3-0-0-4
20.	EC 513	Advance Time Frequency Analysis	3-0-0-4