

SCHEME OF INSTRUCTION & SYLLABI
 Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)
 Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)
 Semester-I (w.e.f. A.Y. 2024-25)

Sr. No.	Course Category	Course Code	CourseTitle	L	T	P	Contact Hrs/Wk	Course Credits	EXAMSCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	BSC	MME0211	Engineering Chemistry/Engineering Physics	3	--	-	3	3	30	10	60	100
2	BSC	MME0212	Engineering Mathematics -I	3	1	-	4	4	30	10	60	100
3	ESC	MME0213	Basics of Mechanical Engineering / Basics of Civil Engineering	2	--	-	2	2	30	10	60	100
4	ESC	MME0214	Engineering Mechanics / Engineering Graphics	3	--	-	3	3	30	10	60	100
5	ESC	MME0215	Basics of Electrical Engineering/Basics of Electronics Engineering	2	--	--	2	2	30	10	60	100
6	BSC	MME0216	Engineering Chemistry Lab / Engineering Physics Lab	--	--	2	2	1	-	25	-	25
7	ESC	MME0217	Engineering Mechanics Lab /Engineering Graphics Lab	--	--	2	2	1	-	25	25	50
8	HSSM	MME0218	Professional Communication-I	--	--	2	2	1	-	25	50	75
9	VSEC	MME0219	Skill Enhancement Course-I/II	--	--	4	4	2	-	25	25	50
10	CCA	MME02110	Yoga	--	--	2	2	1	-	50	-	50
11	ESC	MME02111	Programming Languages-I	--	--	4	4	2	-	25	25	50
			Total	13	01	16	30	22	150	225	425	800

L-Lecture

T-Tutorial

P-Practical

MSE-MidSemesterExamination

ISE/CA-InSemesterEvaluation/ContinuousAssessmentESE-

EndSemester Examination(For LaboratoryEndSemester performanceexternalExamination)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses(ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than Particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning(EL)	Co-curricular And Extracurricular Activities (CCA)
Semester Credits	08	10	-	-	-	02	01	-	01
CumulativeSum	08	10	-	-	-	02	01	-	01

SCHEME OF INSTRUCTION & SYLLABI
 Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)
 Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)
 Semester– II (w.e.f. A.Y. 2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	BSC	MME0211	Engineering Physics / Engineering Chemistry	3	--	-	3	3	30	10	60	100
2	BSC	MME0212	Engineering Mathematics -II	3	1	-	4	4	30	10	60	100
3	ESC	MME0213	Basics of Civil Engineering /Basics of Mechanical Engineering	2	--	-	2	2	30	10	60	100
4	ESC	MME0214	Engineering Graphics /Engineering Mechanics	3	--	-	3	3	30	10	60	100
5	ESC	MME0215	Basics of Electronics Engineering/ Basics of Electrical Engineering	2	--	--	2	2	30	10	60	100
6	BSC	MME0216	Engineering Physics Lab / Engineering Chemistry Lab	--	--	2	2	1	-	25	-	25
7	ESC	MME0217	Engineering Graphics Lab/ Engineering Mechanics Lab	--	--	2	2	1	-	25	25	50
8	HSSM	MME0218	Professional Communication–II	--	--	2	2	1	-	25	50	75
9	VSEC	MME0219	Skill Enhancement Course-II/I	--	--	4	4	2	-	25	25	50
10	CCA	MME02110	NSS	--	--	2	2	1	-	50	-	50
11	ESC	MME02111	Programming Languages-II	--	--	4	4	2	-	25	25	50
			Total	13	01	16	30	22	150	225	425	800

L-Lecture

T-Tutorial

P-Practical

MSE-Mid Semester Examination

ISE/CA-In Semester Evaluation/Continuous Assessment ESE-

End Semester Examination (For Laboratory End Semester performance external Examination)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than Particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Semester Credits	08	10	-	-	-	02	01	-	01
Cumulative Sum	08	10	-	-	-	02	01	-	01

Exit Course for Mechanical & Mechatronics Engineering After First Year

Exit option : Award of UG Certificate in Major with 44 credits and an additional 8 credits from followingExit Courses				
Sr. No	Course Code	Course Title	Mode	Credits
NPTEL				
1	MME-EC-0201	Design of Mechanical Transmission System	Online/offline certification Course or project of total 6 credits Each Course 3 Credits	3
		Fundamental of Welding Science and Technology		
		Inspection & Quality Control in Manufacturing		
		Manufacturing Process & Technology I & II		
VIRTUAL LAB				
2	MME-EC-0202	3D Printing	offline certification Course total 2 Credits 1 Credit each	2
		Basic Electrical Lab		
		Metal Forming & Virtual Simulating		
		Material Response & Microstructure		

Note: Select any 2 Courses from NPTEL & Virtual Lab list

Earning of Additional 2 mandatory Credits for direct Second year admitted students to Mechanical & Mechatronics Engineering branch

Sr.No	Semester	Subject	Credit
1	III	Basics Of Mechanical & Mechatronics Engineering	2

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Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)

Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)

Semester – III

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0231	Analysis of Mechanical Elements	3	1	--	4	4	30	10	60	100
2	PCC	MME0232	Thermal & Fluid Engineering	3	--	--	3	3	30	10	60	100
3	PCC	MME0233	Electrical Machines	3	--	--	3	3	30	10	60	100
4	PCC	MME0234	Computational Methods in Engineering with C++	-	--	2	2	1	--	50	25	75
5	MDM	MME0235	Multi-disciplinary Minor-01	2	--	--	2	2	30	10	60	100
6	OE	MME0236	Open Elective-01	3	--	--	3	3	30	10	60	100
7	HSSM	MME0238	Universal Human Values	2	--	--	2	2	--	50	--	50
8	PCC	MME0239	Electrical Machines Lab	--	--	2	2	1	--	50	25	50
9	HSSM	MME0240	Economics for Engineers	2	--	--	2	2	--	50	--	50
10	OE	MME02310	Open Elective-01 lab	--	--	2	2	1	--	25	25	50
			Total	18	01	6	25	22	150	275	375	800

L- Lecture

T-Tutorial

P-Practical

MSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous AssessmentESE-

End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	18	--	-	-	04	04	--	02
Semester Credits	--	-	12	-	06	-	04	-	-
Cumulative Sum	16	18	12	-	06	04	08	-	02

PROGRESSIVE TOTAL CREDITS: 44+22 =66

SCHEME OF INSTRUCTION & SYLLABI

Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)

Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)

Semester – IV

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0241	Theory of Machines	3	--	--	3	3	30	10	60	100
2	PCC	MME0242	Signals Processing	3	--	--	3	3	30	10	60	100
3	PCC	MME0243	Material & Manufacturing Processes	3	--	--	3	3	30	10	60	100
4	MDM	MME0244	Multi-disciplinary Minor-02	2	--	--	2	2	30	10	60	100
5	OE	MME0245	Open Elective-02	2	--	--	2	2	30	10	60	100
6	HSSM	MME0246	Strategic Management	2	--	--	2	2	-	50	-	50
7	HSSM	MME0247	Professional Ethics	2	--	--	2	2	-	25	-	25
8	PCC	MME0248	Theory of Machines Lab	--	--	2	2	1	--	50	25	75
9	PCC	MME0249	Signal Processing Lab	--	--	2	2	1	-	25	25	50
10	PCC	MME02410	Machine Drawing & CAD Lab	1	--	2	3	2	-	25	25	25
11	BSC	MME02411	Environmental Science	2	--	--	2	Audit	30	10	60	100
12	VSEC	MME02412	Workshop Practice	--	--	2	2	1	--	50	--	50
			Total	20	--	8	28	22	180	285	435	800+100_(Audit)

L- Lecture

T-Tutorial

P-Practical

MSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous Assessment

ESE-

End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	16	12	-	06	06	08	-	02
Semester Credits	-	-	13	-	04	01	04	-	-
Cumulative Sum	16	16	25	-	10	07	12	-	02

PROGRESSIVE TOTAL CREDITS: 66+22 =88

Exit option : Award of UG Certificate in Major with 44 credits and an additional 8 credits from followingExit Courses				
Sr. No	Course Code	Course Title	Mode	Credits
NPTEL				
1	MME-EC-0203	Design of Mechanical Transmission System	Online/offline certification Course or project of total 6 credits Each Course 3 Credits	6
		Oil Hydraulic & pneumatics		
		Mechatronics		
VIRTUAL LAB				
2	MME-EC-0204	Mechanisms & Robotics Lab	offline certification Course total 2 Credits 1 Credit each	2
		Fab Lab		
		Dynamics of Machine Lab		

Note: Select any 2 Courses from NPTEL &Virtual Lab list

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Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)

Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)

Semester – V

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0251	Machine Design	3	--	--	3	3	30	10	60	100
2	PCC	MME0252	Sensors, Transducers and Actuators	3	--	--	3	3	30	10	60	100
3	PCC	MME0253	Additive Manufacturing	3	--	--	3	3	30	10	60	100
4	PEC	MME0254	PEC - 1	3	--	--	3	3	30	10	60	100
5	MDM	MME0255	Multi-disciplinary Minor-03	3	--	--	3	3	30	10	60	100
6	OE	MME0256	Open Elective-03	2	--	--	2	2	30	10	60	100
7	PCC	MME0257	Sensor Lab	--	--	2	2	1	-	25	25	50
8	PCC	MME0258	Additive Manufacturing Lab	--	--	2	2	1	-	25	25	50
9	PEC	MME0259	PEC – 1 lab	--	--	2	2	1	-	25	--	25
10	MDM	MME02510	Multi-disciplinary Minor-03 Lab	--	--	2	2	1	-	50	--	50
11	EL	MME02511	Minor Project 01	--	--	2	2	1	-	25	--	25
			Total	17	--	10	27	22	180	210	410	800

L- Lecture

T-Tutorial

P-Practical

MSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous Assessment ESE- End

Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	16	25	-	10	07	12	-	02
Semester Credits	-	-	11	04	06	-	-	01	-
Cumulative Sum	16	16	36	04	16	07	12	02	02

PROGRESSIVE TOTAL CREDITS: 88+22=110

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Semester – VI

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0261	Industrial Automation Robotics	3	--	--	3	3	30	10	60	100
2	PCC	MME0262	Neural Network & Fuzzy Logic Control	3	1	--	4	4	30	10	60	100
3	PCC	MME0263	Micro & Nano Manufacturing System	3	--	--	3	3	30	10	60	100
4	PEC	MME0264	PEC - 2	3	--	--	3	3	30	10	60	100
5	PEC	MME0265	PEC - 3	3	--	--	3	3	30	10	60	100
6	MDM	MME0266	Multi-disciplinary Minor - 04	2	--	--	2	2	30	10	60	100
7	PCC	MME0267	Robot Operating System Lab	--	--	2	2	1	-	50	25	75
8	PCC	MME0268	Fabrication Lab	--	--	2	2	1	-	50	25	75
9	EL	MME0269	Minor Project 02 - Based On IAR	--	--	2	2	1	-	50	--	50
			Total	17	1	8	26	22	180	210	410	800

L- Lecture

T-Tutorial

P-Practical

MSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous AssessmentESE-

End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	16	36	04	16	07	12	02	02
Semester Credits	-	-	12	06	02	--	-	01	-
Cumulative Sum	16	16	48	10	18	07	12	03	02

PROGRESSIVE TOTAL CREDITS: 110+22 =132

Exit option : Award of B. Vocational in Major with 132 credits and an additional 8 credits from following Exit Courses				
Sr. No	Course Code	Course Title	Mode	Credits
1	ME-EC-0205	Computer Aided Drafting Lab (ANSYS, SOLIDWORKS)	Online/offline certification Course or project of total 8 credits	8
OR				
2	ME-EC-0206	Machine Maintenance Lab		8

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Programme Mechanical & Mechatronics Engineering (Additive Manufacturing)

Scheme of Instructions: First Year B.Tech. in Mechanical & Mechatronics Engineering (Additive Manufacturing)

Semester – VII

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0271	Noise Vibration and Harshness Engineering (NVH)	3	--	--	3	3	30	10	60	100
2	PCC	MME0272	Industrial Internet of Things-IIOT	3	--	--	3	3	30	10	60	100
3	PEC	MME0273	PEC - 4	3	--	--	3	3	30	10	60	100
4	EL	MME0274	Research Methodology	3	--	--	3	3	30	10	60	100
5	MDM	MME0275	Multi-disciplinary Minor - 05	2	--	--	2	2	30	10	60	100
6	PCC	MME0276	Noise Vibration and Harshness Engineering (NVH) Lab	-	-	2	2	1	-	25	25	50
7	PCC	MME0277	Industrial Internet of Things - IIOT Lab	-	-	2	2	1	-	25	25	50
8	PCC	MME0278	Finite Element of Analysis Lab	-	-	2	2	1	-	25	-	25
9	EL	MME0279	Seminar-I	-	-	2	2	1	-	25	-	25
10	EL	MME02710	Project Phase I	--	--	6	6	3	-	50	50	100
11	EL	MME02711	Industrial Training*	--	--	2	2	1	-	50	--	50
			Total	14	0	16	30	22	150	250	450	800

L- Lecture

T-Tutorial

P-Practical

MSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous AssessmentESE-

End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	18	48	10	18	05	12	03	02
Semester Credits	-	-	09	03	02	-	-	08	-
Cumulative Sum	16	18	57	13	20	05	12	11	02

PROGRESSIVE TOTAL CREDITS: 132+22 =154

SCHEME OF INSTRUCTION & SYLLABI
Programme Mechanical & Mechatronics Engineering

Scheme of Instructions: Final Year B. Tech. in Mechanical & Mechatronics Engineering

Semester – VIII

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE/CA	ESE	TOTAL
1	PCC	MME0281	Entrepreneurship	3	--	--	3	3	30	10	60	100
2	PCC	MME0282	Modeling & Simulation of Mechatronics System	3	--	--	3	3	30	10	60	100
3	PEC	MME0283	PEC - 5	3	--	--	3	3	30	10	60	100
4	PEC	MME0284	PEC - 6	3	--	--	3	3	30	10	60	100
5	MDM	MME0285	Multi-disciplinary Minor - 06	2	--	--	2	2	30	10	60	100
6	PCC	MME0286	Modeling & Simulation of Mechatronics System lab	--	--	2	2	1	-	25		50
7	PEC	MME0287	Automotive Mechatronics lab	--	--	2	2	1	-	25	25	50
8	EL	MME0288	Seminar-II	--	--	2	2	1	-	25	-	25
9	EL	MME0289	Project Phase II	--	--	10	10	5	-	100	100	200
			Total	14	0	16	30	22	150	225	425	800

L- Lecture

T-Tutorial

P-Practical

M MMMSE- Mid Semester Examination

ISE/CA- In Semester Evaluation/Continuous AssessmentESE-

End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Last Sem. Cumulative Sum	16	18	57	13	20	05	12	11	02
Semester Credits	-	-	07	07	02	-	-	06	-
Cumulative Sum	16	18	64	20	22	05	10	17	02

PROGRESSIVE TOTAL CREDITS = 176

Following Degrees will begin with effect from Academic Year 2026-27.

- A) Bachelor's Engg./ Tech. Honours Degree in chosen Major Engg./ Tech. Discipline with Multidisciplinary Minor (194 credits)
- B) Bachelor's Engg./ Tech. Honours with Research Degree in chosen Major Engg./ Tech. Discipline with Multidisciplinary Minor (194 credits)
- C) Bachelor's Engg./ Tech. Degree in chosen Major Engg./ Tech. Discipline with Double Minor (Multidisciplinary and Specialisation Minor (194 credits)

List of Electives: Verticals (PEC)

Specialization	Design	Thermal Power	Production	Management
Elective-I	Design for Manufacturing and Assembly	Computational Fluid Dynamics (CFD	Advance manufacturing Processes	Engineering Economics and Costing
Elective-II	Micro Electro Mechanical System (MEMS)	Design of Thermal Systems	Advanced Casting and Welding Techniques	Total Quality Management (TQM)
Elective-III	Experimental Mechanics	Cryogenics	Production Management	Work Study and Ergonomics
Elective-IV	Advanced Strength of Materials	Renewable Energy Systems	Smart Manufacturing	Enterprise Resource Planning (ERP)
Elective-V	Tribology	Automotive Mechatronics	Non-Conventional Machining Processes	Human Resource Management in Industries
Elective-VI	Mechatronic System Design	Heat & Energy Engineering	Flexible Manufacturing Systems	Sustainable Operations Management

List of Open Electives

Open Elective-I	Autocad / Autocad Lab
Open Elective-II	Design & Technology
Open Elective-III	Industrial Management

[IV] Basket of Multidisciplinary minor of 14 credits starting from Sem-III.

Semester	Course Offered	L	P/T	Hrs.	Credit
III	CAD	2	-	2	2
IV	Product Design & Development	2	-	2	2
V	Fundamentals of Design for Product Manufacturing	3	-	3	3
V	Fundamentals of Design for Product Manufacturing Lab	--	2	2	1
VI	Ergonomics & Human factors	2	-	2	2
VII	Rapid Prototyping	2	-	2	2
VIII	Design optimization	2	-	2	2

Instructions regarding Examinations:

1. Compulsory passing with 40% marks is mandatory in ESE examinations and combined passing marks (MSE+ISE/CA+ESE) for theory course is 40 %
2. Mid sem. examination will be based on 50 % syllabus from beginning (First Three Units).
3. No compulsory passing for **MSE**.
4. ESE paper setting weightage will be, **25 % on syllabus covered for MSE (First Three Units) and 75 % on remaining syllabus (Last Three Units)**.
5. Passing percentage for ESE practical examination 40%.