

B.Tech. (Mechanical Engineering) – Batch 2023 & 2024

B.Tech. (Mechanical Engineering)

Semester I

BSC 1	MTL BS101	Engineering Mathematics-I	3	1	0	4
BSC 2	PHL BS101	Engineering Physics	3	0	0	3
BSC 2	PHP BS101	Engineering Physics Lab	0	0	2	1
ESC 1	CSL ES101	Introduction to C Programming	3	0	0	3
ESC 1	CSP ES101	C Programming Lab	0	0	2	1
ESC 2	ECL ES101	Basic Electronics	3	0	0	3
ESC 2	ECP ES101	Basic Electronics Lab	0	0	2	1
SEC 1	MEM SE101	Engineering Workshop	1	0	2	2
AEC 1 / VAC 1		Ability Enhancement /Value Added Course				2
						20

Semester II

BSC 3	MTL BS102	Engineering Mathematics II	3	1	0	4
BSC 4	BTL BS104	Applied Chemistry	3	0	0	3
BSC 4	BTP BS104	Applied Chemistry Lab	0	0	2	1
DCC 1	MEL DC102	Engineering Mechanics	3	1	0	4
DCC 2	MEL DC104	Materials Science and Engineering	3	0	0	3
DCC 2	MEP DC104	Materials Science and Engineering Lab	0	0	2	1
SEC 2	MEM SE104	Engineering Graphics with CAD	1	0	2	2
AEC 2		Ability Enhancement Course				2
VAC 2		Value Added course				2
MAC 1	PCN MA102	Universal Human Values-II	2	0	0	0
		Cumulative Credits	42			22

Semester III

BSC 5	MEL BS201	Thermodynamics	3	0	0	3
ESC 3	CSL ES201	Programming using Python	3	0	0	3
ESC 3	CSP ES201	Python Programming Lab	0	0	2	1
DCC 3	MEL DC201	Fluid Mechanics	3	0	0	3
DCC 3	MEP DC201	Fluid Mechanics Lab	0	0	2	1
DCC 4	MEL DC203	Kinematics of Machines	3	1	0	4
DCC 5	MEL DC205	Strength of Materials – I	3	0	0	3
DCC 5	MEP DC205	Strength of Materials Lab	0	0	2	1
SEC 3	MEM SE203	Machine Drawing with CAD	1	0	2	2
PR	MEI PR201	Summer Internship – I				1
VAC 3	XXX VAXX	Value Added Course				2
		Cumulative Credits	66			24

Semester IV

DCC 6	MEL DC202	Thermal Engineering	3	0	0	3
DCC 6	MEP DC202	Thermal Engineering Lab	0	0	2	1
DCC 7	MEL DC204	Fluid Machines	3	0	0	3
DCC 7	MEP DC204	Fluid Machines Lab	0	0	2	1
DCC 8	MEL DC206	Manufacturing Processes	3	0	0	3

DCC 8	MEP DC206	Manufacturing Processes Lab	0	0	2	1
DCC 9	MEL DC208	Dynamics of Machines	3	0	0	3
DCC 9	MEL DC208	Dynamics of Machines Lab	0	0	2	1
DCC 10	MEL DC210	Strength of Materials – II	3	1	0	4
VAC 4	BTL VA202	Environmental Science & Education	2	0	0	2
		Cumulative Credits	88			22

Semester V

DCC 11	MEL DC301	Machine Design	3	1	0	4
DCC 12	MEL DC303	CAD/CAM	3	0	0	3
DCC 12	MEP DC303	CAD/CAM Lab	0	0	2	1
DCC 13	MEL DC305	AI & ML in Mechanical Engineering	3	0	0	3
DCC 13	MEP DC305	AI & ML Lab	0	0	2	1
DEC 1		School Elective – I	3	1/0	0/2	4
DEC 2 / GEC 1	XXL GE3XX	School Elective – II/Generic Elective - I	3	1/0	0/2	4
PR	MEI PR301	Summer Internship-II				1
DCC	MED PD301	Project Work -1				2
		Cumulative Credits	111			23

Semester VI

DCC 14	MEL DC302	Manufacturing Processes II	3	0	0	3
DCC 14	MEP DC302	Manufacturing Processes II Lab	0	0	2	1
DCC 15	MEL DC304	Heat and Mass Transfer	3	0	0	3
DCC 15	MEP DC304	Heat and Mass Transfer Lab	0	0	2	1
DEC 3	MEL DE3XX	School Elective – III	3	1/0	0/2	4
DEC 4 / GEC 2	XXL GE3XX	School Elective – IV/Generic Elective -II	3	1/0	0/2	4
AEC		Management / Entrepreneurship/Economy	3	0	0	3
DCC	MED PR302	Project Work- II				2
MAC 2	PCN MA302	Indian Knowledge System	2	0	0	NC
		Cumulative Credits	132			21

Semester VII

DCC 16	MEL DC401	Industrial Engineering	3	1	0	4
DEC 5	MEL DE4XX	School Elective – V	3	1/0	0/2	4
DEC 6 / GEC 3	XXL GE4XX	School Elective – VI/ Generic Elective – III	3	1/0	0/2	4
PR	MEI PR401	Summer Internship –III				4
DCC/PR	MED PR401	Minor Project				2
		Cumulative Credits	150			18

Semester VIII

DCC/PR	MED PR402 / MEI PR402	Major Project / Internship (Industrial or In-house Project)				10
		Cumulative Credits	160			10

Honors in 3D Printing Technology

DEC	MEL DE301	Product Design & Development	3	1	0	4
DEC	MEL DE313	Materials and characterization techniques	3	1	0	4
DEC	MEL DE326	3D Printing: Introductions and Processes	3	1	0	4

DEC	MEL DE302	Biomaterials	3	1	0	4
DEC	MEM DE316	Finite Element Analysis	3	0	2	4
DEC	MEL DE401	Computational Fluid Dynamics	3	1	0	4
DEC	MEM MA 401	Digital Fabrication	2	0	4	4

Honors in Robotics and Automation

DEC	MEL DE303	Industrial Robotics	3	1	0	4
DEC	MEL DE315	Mechatronics	3	0	2	4
DEC	MEL MA301	Introduction to Automation	3	1	0	4
DEC	MEL DE304	Mechanics of Robots	3	1	0	4
DEC	MEL DE318	Computer Integrated Manufacturing System	3	1	0	4
DEC	MEL MA403	Robo-Dynamics	3	1	0	4
DEC	MEL MA405	IOT and Automation	3	1	0	4

Honors in Biomechanical Systems

DEC	BTL BS102	Biology for Engineers	3	1	0	4
DEC	MEL DE305	Introduction to Bio Mechanics	3	1	0	4
DEC	MEL DE317	Introduction to Biomedical Engineering	3	1	0	4
DEC	MEL MA303	Bio Tribology	3	1	0	4
DEC	MEL DE302	Biomaterials	3	1	0	4
DEC	MEM DE316	Finite Element Analysis	3	0	2	4
DEC	MEM MA407	Additive Manufacturing	3	0	2	4

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Honors in Sustainable Energy Engineering

DEC	MEL DE307	Energy and its Resources	3	1	0	4
DEC	MEL DE319	Energy storage for Renewables	3	1	0	4
DEC	MEL MA305	Wind Energy and Resources	3	1	0	4
DEC	MEL DE306	Solar thermal power Engineering	3	1	0	4
DEC	MEL DE320	Power Plant Engineering	3	1	0	4
DEC	MEL MA409	Energy Management	3	1	0	4
DEC	MEL MA411	Solar Energy Technologies and System Design	3	1	0	4

Minor in 3D Printing Technology

DEC	MEL MA307	Engineering Materials	3	1	0	4
DEC	MEL DE301	Product Design & Development	3	1	0	4
DEC	MEL DE313	Materials and characterization techniques	3	1	0	4
DEC	MEL DE326	3D Printing: Introductions and Processes	3	1	0	4
DEC	MEL DE302	Biomaterials	3	1	0	4
DEC	MEL DE401	Computational Fluid Dynamics	3	1	0	4
DEC	MEM MA401	Digital Fabrication	2	0	4	4

Minor in Robotics and Automation

DEC	MEL DC101	Engineering Mechanics	3	1	0	4
DEC	MEL DC201	Kinematics of Machines	3	1	0	4
DEC	MEL DE303	Industrial Robotics	3	1	0	4
DEC	MEL DE315	Mechatronics	3	1	0	4
DEC	MEL MA301	Introduction to Automation	3	1	0	4
DEC	MEL DE304	Mechanics of Robots	3	1	0	4
DEC	MEL DE318	Computer Integrated Manufacturing System	3	1	0	4

Minor in Biomechanical Systems

DEC	BTL BS102	Biology for Engineers	3	1	0	4
DEC	MEL MA309	Engineering Mechanics	3	1	0	4
DEC	MEL DE305	Introduction to Bio Mechanics	3	1	0	4
DEC	MEL DE317	Introduction to Biomedical Engineering	3	1	0	4
DEC	MEL MA 303	Bio Tribology	3	1	0	4
DEC	MEL DE302	Biomaterials	3	1	0	4
DEC	MEL DE316	Finite Element Analysis	3	0	2	4

LIST OF SKILL ENHANCEMENT COURSES

Course Code	Course Title	L-T-P	Credits
MEM SE101	Engineering Workshop	1-0-2	2
MEM SE102	Engineering Graphics with CAD	1-0-2	2
MEM SE103	3D Printing Technology	1-0-2	2

LIST OF ABILITY ENHANCEMENT COURSES

Course Code	Course Title	L-T-P	Credits
MEM AE101	Presentation Skills and Technical Writing	1-0-2	2

LIST OF VALUE ADDED COURSES

Course Code	Course Title	L-T-P	Credits
MEL VA101	Introduction to Sustainability	2-0-0	2
MEL VA102	Introduction to Product Design	2-0-0	2
MEL VA103	MATLAB for Engineers	2-0-0	2

List Of Departmental/School Core Electives (DES)

Departmental Elective –I

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE301	Product Design and Development	3-1-0	4
2	MEL DE303	Industrial Robotics	3-1-0	4
3	MEL DE305	Introduction to Bio Mechanics	3-1-0	4
4	MEL DE307	Energy and its Resources	3-1-0	4
5	MEL DE309	Hydrogen and Fuel Cell	3-1-0	4
6	MEL DE311	Tribology	3-1-0	4

Departmental Elective –II

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE313	Materials and Characterization Techniques	3-1-0	4
2	MEM DE315	Mechatronics	3-0-2	4
3	MEL DE317	Introduction to Biomedical Engineering	3-1-0	4
4	MEL DE319	Energy Storage for Renewables	3-1-0	4
5	MEL DE321	Sustainable Energy Engineering	3-1-0	4
6	MEM DE323	Mechanical Vibrations	3-0-2	4

Departmental Elective –III

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE302	Biomaterials (*)	3-1-0	4
2	MEL DE304	Mechanics of Robots	3-1-0	4
3	MEL DE306	Solar Thermal Power Engineering	3-1-0	4
4	MEL DE308	Gas Dynamics and Jet Propulsion	3-1-0	4
5	MEM DE310	IC Engines	3-0-2	4
6	MEL DE312	Control Systems	3-1-0	4
7	MEM DE314	Metrology and Measurements	3-0-2	4

(*) being considered in two Honors programme

Departmental Elective –IV

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEM DE316	Finite Element Analysis (*)	3-0-2	4
2	MEL DE318	Computer Integrated Manufacturing System	3-1-0	4
3	MEL DE320	Power Plant Engineering	3-1-0	4
4	MEL DE322	Experimental Stress Analysis	3-1-0	4
5	MEM DE324	Automobile Engineering	3-0-2	4

(*) being considered in two Honors programme

Departmental Elective –V

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE401	Computational Fluid Flow and Heat Transfer	3-1-0	4
2	MEM DE403	Electric Vehicles	3-0-2	4
3	MEM DE405	Refrigeration and Air Conditioning	3-0-2	4
4	MEL DE407	Fracture Mechanics	3-1-0	4
5	MEL DE409	Operations Research	3-1-0	4

Departmental Elective –VI

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE411	Modeling and Simulation of Manufacturing System	3-1-0	4
2	MEL DE412	Control Systems	3-1-0	4
3	MEL DE413	Work Study and Ergonomics	3-1-0	4
4	MEL DE414	Micro and Nano Machining	3-1-0	4
5	MEL DE415	Quality Management	3-1-0	4

LIST OF GENERIC ELECTIVES

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE301	Product Design and Development	3-1-0	4
2	MEL DE305	Introduction to Bio Mechanics	3-1-0	4
3	MEL DE321	Sustainable Energy Engineering	3-1-0	4
4	MEL DE313	Materials and Characterization Techniques	3-1-0	4
5	MEL DE413	Work Study and Ergonomics	3-1-0	4
6	MEL DE307	Energy and its Resources	3-1-0	4
7	MEL DE302	Biomaterials	3-1-0	4
8	MEL DE409	Operations Research	3-1-0	4
9	MEL DE320	Power Plant Engineering	3-1-0	4
10	MEL DE 326	3D Printing: Introductions and Processes	3-1-0	4
11	MEL DE415	Quality Management	3-1-0	4
12	MEM DE403	Electric Vehicles	3-0-2	4
13	MEL DE303	Industrial Robotics	3-1-0	4
14	MEM DE315	Mechatronics	3-1-0	4
15	MEL DE304	Mechanics of Robots	3-1-0	4
16	MEL DE318	Computer Integrated Manufacturing System	3-1-0	4
17	MEL DE317	Introduction to Biomedical Engineering	3-1-0	4
18	MEM DE316	Finite Element Analysis	3-0-2	4