Department of Mechanical Engineering

B.Tech. Course Structure
(*without* Minor or Second Major 2025-26 onwards)

Category	B.Tech. with Internship Program Components	Proposed	Recommended Minimum	Recommended Maximum
HLM	Humanities, Social Science, Language and Management	**11**	10	--
IS	Institute Science	**25**	22	--
IE	Institute Engineering	**18**	15	--
EP	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices, and Practice courses of Department/ School	**8**	8	--
ϴDC+DE	Department/Program Core +Elective	**75**	68	--
OE	Open Electives	**6**	6	--
Indl/RI/ SUE	Industrial/research internship/Start-up or Entrepreneurship	**15**	15	--
DP	Exploratory project	**3**	3	3
œTotal		**161**	**œ150**	**œ161**
***SP**	*Stream Projects for B.Tech. Honours	**10**	10	10
		171	**œ160**	**œ171**

ϴDC+DE: The Department or Program Core (DC) should typically be between 50 to 70% of the total DC+DE credits

œ Shows the minimum and the maximum credit limits for a B.Tech. degree.

B.Tech. Course Structure for Mechanical Engineering (2025-2026 onwards)
(without minor or Second Major)

UG-CRC Code	Course Code	Course Name	L–T–P			Credits
Mechanical Engineering: 4-Year B.Tech. Semester-I						
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	2.5
GY.CP101.14	CP101	Creative Practices #	0	1	3	2.5
HLM	HLM101	Universal Human Values	2	0	0	2
		Total	**2**	**2**	**6**	**7**
LM.HL101.14	HLM102	English*	2	0	0	2
		Total	**4**	**2**	**6**	**9**
#Creative Practices course to be announced by Dean Academic Office						
*English course to be taken by student as recommended after Diagnostic Test						

Note: 1. Per semester load should not exceed 22 credits.
2. It is recommended that departments limit the maximum total credits to 161. Otherwise, because of the extra load the students may avoid taking a Minor discipline. The calculation of total credits excludes Basic English, Creative Practice, and Elementary Physical Education.

Mechanical Engineering : 4-Year B.Tech. Semester -I						
IS	PHY101	Classical, Relativistic & Quantum Mechanics	3	1	2	5
IS	MA101	Engineering Mathematics-I	3	1	0	4
IS	CY101	Chemistry-I	2	1	2	4
IE	ME103	Engg. Thermodynamics	3	1	0	4
EP	ME105	Manufacturing Practice-I	0	0	3	1.5
EP	ME104	Engineering Drawing	1	0	3	2.5
		Total	**12**	**4**	**10**	**21**
L: Lecture Hours, T: Tutorials Hours, P: Practical Or Laboratory Hours, C: Credits						

Mechanical Engineering : 4-Year B.Tech. Semester -II						
IS	MA102	Engineering Mathematics-II	3	1	0	4
IE	ME102	Engineering Mechanics	3	1	0	4

UG-CRC Code	Course Code	Course Name	L–T–P			Credits
IE	CSO101	Computer Programming	3	1	2	5
EP	ME106	Manufacturing Practice-II	0	0	3	1.5
EP	ME111	Machine Drawing	0	0	3	1.5
HLM		Any one of the courses offered by Humanistic Department	3	0	0	3
DC	ME108	Materials for Mechanical Engineering	2	0	0	2
		Total	**14**	**3**	**8**	**21**
# Students can study one HLM course from the bouquet of HLM choices given.						
Mechanical Engineering: 4-Year B.Tech. Semester -III						
IE	EO101	Fundamentals of Electrical Engg.	3	1	0	4
DC	ME201	Mechanics of Material	3	0	0	3
DC	ME203	Fluid Mechanics and Fluid Machinery	3	0	2	4
DC	ME205	Manufacturing Technology	3	0	2	4
DC	ME207	Mechanical Measurements	2	0	0	2
HLM		Any one of the courses offered by Humanistic Department	3	0	0	3
		Total	**17**	**1**	**4**	**20**
# Students can study one HLM course from the bouquet of HLM choices given.						
Mechanical Engineering: 4-Year B.Tech. Semester -IV						
IS	MA203	Numerical Techniques	3	1	0	4
DC	ME202	Kinematics of Machines	3	0	0	3
DC	ME204	Mechanics of Deformable Solids	3	0	2	4
DC	ME206	Heat and Mass Transfer	3	0	2	4
DC	ME208	Metal Machining and Machine Tools	3	0	2	4
DP	ME212	Exploratory Project	0	0	6	3
		Total	**15**	**1**	**12**	**22**
Mechanical Engineering: 4-Year B.Tech. Semester -V						
OE	OE1	Open Elective-1	3	0	0	3
DC	ME301	Fundamentals of Machine Design	3	0	0	3
DC	ME303	Dynamics of Machines	2	0	2	3
DC	ME305	Industrial Management	3	0	0	3
IS	MA202	Probability and Statistics	3	1	0	4
IE	EO103	Basic Electrical Engineering Lab	0	0	2	1
DE	DE 1	Departmental Elective-1 (DE 1)	3	0	0	3
		Total	**17**	**1**	**4**	**20**
List of Department Electives - 1 (DE 1)						
DE1	ME321	Operations Research	3	0	0	3
DE1	ME322	Engineering Economics	3	0	0	3
DE1	ME331	Computer-aided Design	3	0	0	3
DE1	ME332	Mechanical Vibrations	3	0	0	3
DE1	ME333	Composite Materials	3	0	0	3
DE1	ME334	Tribology	3	0	0	3
DE1	ME335	Control Systems Engineering	3	0	0	3
DE1	ME341	Robotics	3	0	0	3
DE1	ME342	Welding Engineering	3	0	0	3
DE1	ME343	Unconventional Machining Processes	3	0	0	3
DE1	ME344	Metallurgy of Casting and welding	3	0	0	3
DE1	ME351	Refrigeration & Air-conditioning	3	0	0	3
DE1	ME352	Automobile Engineering	3	0	0	3
DE1	ME353	Internal Combustion Engine	3	0	0	3
DE1	ME354	Computational Fluid Dynamics	3	0	0	3
Mechanical Engineering: 4-Year B.Tech. Semester -VI						
		Internship	0	0	30	15
DE	DE2	One Swayam/ NPTEL Course	3	0	0	3
		Total	**3**	**0**	**30**	**18**
Mechanical Engineering: 4-Year B.Tech. Semester -VII						
DC	ME401	Design of Machine Elements	3	0	2	4
DC	ME403	Energy Conversion systems	3	0	2	4

UG-CRC Code	Course Code	Course Name	L–T–P			Credits
DC	ME405	Tool Design and Metrology	3	0	2	4
OE	OE2	Open Elective-2	3	0	0	3
DE	DE 3	Departmental Elective-3 (DE 3)	3	0	0	3
DE	DE 4	Departmental Elective-4 (DE 4)	3	0	0	3
		Total credits in the semester	**18**	**0**	**6**	**21**
		Stream Project	0	0	10	5
		Total	**18**	**0**	**16**	**26**
List of Department Electives - 3 and 4 (DE 3/DE4)						
DE 3/DE 4	ME421	Production Planning and Control	3	0	0	3
DE 3/DE 4	ME422	Management Information System	3	0	0	3
DE 3/DE 4	ME423	Applied Evolutionary Algorithms for Optimization Problems	3	0	0	3
DE 3/DE 4	ME431	Mechatronics	3	0	0	3
DE 3/DE 4	ME432	Finite Element Method	3	0	0	3
DE 3/DE 4	ME433	Experimental Mechanics & NDT	3	0	0	3
DE 3/DE 4	ME434	Theory of elasticity	3	0	0	3
DE 3/DE 4	ME435	Elasticity and Plasticity of large deformations	3	0	0	3
DE 3/DE 4	ME441	Principles of Materials Selection	3	0	0	3
DE 3/DE 4	ME442	Mechanical Behaviour of Engineering Materials	3	0	0	3
DE 3/DE 4	ME443	Materials for Tribological Applications	3	0	0	3
DE 3/DE 4	ME444	Characterization of Engineering Materials	3	0	0	3
DE 3/DE 4	ME445	Solid State Joining Techniques	3	0	0	3
DE 3/DE 4	ME451	Combustion Technology	3	0	0	3
DE 3/DE 4	ME452	Power Generation	3	0	0	3
DE 3/DE 4	ME453	Non-Conventional Energy Resources	3	0	0	3
DE 3/DE 4	ME454	Intellectual Property Rights	3	0	0	3
Mechanical Engineering: 4-Year B.Tech. Semester -VIII						
DC	ME402	Turbomachines	3	0	0	3
HLM		Humanities, Social Science, Language and Management course	3	0	0	3
DE	DE 5	Departmental Elective-5 (DE 5)	3	0	0	3
DE	DE 6	Departmental Elective-6 (DE 6)	3	0	0	3
DE	DE 7	Departmental Elective-7 (DE 7)	3	0	0	3
EP	ME412	Computational Mechanics Lab	0	0	2	1
		Total credits in the semester	**15**	**0**	**2**	**16**
		Stream Project	0	0	10	5
		Total Credits in the Semester (Hons.)	**15**	**0**	**12**	**21**
List of Department Electives - 5, 6 and 7 (DE 5/DE 6 /DE 7)						
DE5/DE6/DE7	ME461	Forecasting and Time Series Analysis	3	0	0	3
DE5/DE6/DE7	ME462	Facility Planning : Layout and Location	3	0	0	3
DE5/DE6/DE7	ME463	Simulation for Decision Making	3	0	0	3
DE5/DE6/DE7	ME464	Supply Chain Management	3	0	0	3
DE5/DE6/DE7	ME465	Design of Production System	3	0	0	3
DE5/DE6/DE7	ME466	Total Quality Management	3	0	0	3
DE5/DE6/DE7	ME471	Biomaterials	3	0	0	3
DE5/DE6/DE7	ME472	Smart Materials and Structures	3	0	0	3
DE5/DE6/DE7	ME473	Fracture Mechanics	3	0	0	3
DE5/DE6/DE7	ME474	Vehicle Dynamics	3	0	0	3
DE5/DE6/DE7	ME475	Theory of Plasticity	3	0	0	3
DE5/DE6/DE7	ME476	Impact Dynamics and Crashworthiness	3	0	0	3
DE5/DE6/DE7	ME477	Continuum Mechanics	3	0	0	3
DE5/DE6/DE7	ME478	Product Design	3	0	0	3
DE5/DE6/DE7	ME479	Micro-Electro-Mechanical Systems	3	0	0	3
DE5/DE6/DE7	ME481	Lasers in Manufacturing Technology	3	0	0	3
DE5/DE6/DE7	ME482	Tribology of Manufacturing Processes	3	0	0	3
DE5/DE6/DE7	ME483	Theory of Abrasive Machining	3	0	0	3
DE5/DE6/DE7	ME484	Green Manufacturing	3	0	0	3
DE5/DE6/DE7	ME485	Additive Manufacturing	3	0	0	3
DE5/DE6/DE7	ME491	Thermal Management of Electronic System	3	0	0	3
DE5/DE6/DE7	ME492	Sustainable Energy Technologies	3	0	0	3
DE5/DE6/DE7	ME493	Bio Transport Mechanism	3	0	0	3
DE5/DE6/DE7	ME494	Wind Power Meteorology	3	0	0	3