JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in MECHANICAL ENGINEERING
COURSE STRUCTURE (R25 Regulations)
Applicable from A.Y. 2025-26 Batch
(For University Constituent Colleges only)

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1	MA101BSC	Matrices and Calculus	3	1	0	4
2	PH102BSC	Engineering Physics	3	0	0	3
3	ME103CS	C Programming and Data Structures	3	0	0	3
4	ME104ES	Classical Engineering Mechanics	3	0	0	3
5	HSC	English for Skill Enhancement	3	0	0	3
6	BSC	Engineering Physics Laboratory	0	0	2	1
7	CSC	C Programming and Data Structures Laboratory	0	0	2	1
8	ME108ES	Engineering Workshop	0	0	2	1
9	HSC	English Language and Communication Skills Laboratory	0	0	2	1
10		Induction Program	-	-	-	-
		Total Credits	**15**	**01**	**08**	**20**

I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Ordinary Differential Equations and Vector Calculus	3	0	0	3
2	BSC	Applied Chemistry	3	0	0	3
3	ME203PC	Innovations in Mechanical Engineering	2	0	0	2
4	ESC	Elements of Electrical and Electronics Engineering	3	0	0	3
5	ME205ES	Material Science and Metallurgy	3	0	0	3
6	ME206ES	Engineering Graphics and Computer Aided Drafting	2	0	2	3
7	BSC	Chemistry Laboratory for Engineers	0	0	2	1
8	CSC	Python Programming Laboratory	0	1	2	2
9	ESC	Elements of Electrical and Electronics Engineering Laboratory	0	0	2	1
		Total Credits	**16**	**1**	**08**	**21**

II YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Probability, Statistics and Complex Variables	3	0	0	3
2	ME302PC	Fluid Mechanics and Hydraulic Machines	3	0	0	3
3	ME303PC	Mechanics of Solids	3	0	0	3
4	ME304PC	Production Technology	3	0	0	3
5	ME305PC	Thermodynamics	3	0	0	3
6	ME306CS	Computational Mathematics Laboratory	0	0	2	1
7	ME307PC	Production Technology Laboratory	0	0	2	1
8	ME308PC	Material Science and Mechanics of Solids Laboratory	0	0	2	1
9	ME309PC	Fluid Mechanics and Hydraulic Machines Laboratory	0	0	2	1
10	MESDC1	Design Thinking and Ideation (Skill Development Course – 1)	0	0	2	1
		Total Credits	**15**	**0**	**10**	**20**

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	ME401PC	Kinematics of Machinery	3	0	0	3
2	ME402PC	Thermal Engineering - I	3	0	0	3
3	ME403PC	Design of Machine Elements	3	0	0	3
4	ME404PC	Instrumentation and Control Systems	3	0	0	3
5	ME405PC	Operations Research	3	0	0	3
6	ME406PC	Innovation and Entrepreneurship	2	0	0	2
7	ME407PC	Conventional and Computer Aided Machine Drawing	0	0	2	1
8	ME408PC	Instrumentation and Control Systems Laboratory	0	0	2	1
9	ME409PC	Thermal Engineering-I Laboratory	0	0	2	1
10	MESDC2	Data Analytics and Python for Engineers (Skill Development Course – 2)	0	0	2	1
11	MC410	Indian Knowledge System	1	0	0	0
		Total Credits	**18**	**0**	**8**	**21**

Note: Students need to register for the Field based Project work / Internship during summer vacation (Refer to III Year I Semester Course Structure) and acquire the credits allotted by doing 6 weeks Work-based Vocational Course/ Internship or Apprenticeship. Please refer R25 Academic Regulations for more information.

III YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	ME501PC	Design of Transmission Elements	3	1	0	4
2	ME502PC	Thermal Engineering - II	3	0	0	3
3	ME503PC	Metrology and Machine Tools	3	0	0	3
4	ME504PE	Professional Elective-I	3	0	0	3
5	ME505OE	Open Elective-I	2	0	0	2
6	ME506PC	Thermal Engineering - II Laboratory	0	0	3	1
7	ME507PC	Metrology and Machine Tools Laboratory	0	0	3	1
8	ME509PC	Field Based Project/ Internship	0	0	4##	2
9		English for Employability Skills	0	0	2	1
10	MESDC3	Modelling and Simulation Tools(Skill Development Course – 3)	0	0	2	1
11	MC510	Gender Sensitization Lab^^/ Human Values and Professional Ethics^^	1	0	0	0
		Total Credits	**15**	**1**	**14**	**21**

^^**Note: For the courses Gender Sensitization Lab and Human Values and Professional Ethics -** one hour of instruction will be conducted on alternate weeks. For example, if a one-hour class for Gender Sensitization Lab is conducted this week, then a one-hour class for Human Values and Professional Ethics will be conducted in the following week.

Field based only

III YEAR II SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	ME601PC	Dynamics of Machinery	3	1	0	4
2	ME602PC	Heat Transfer	3	0	0	3
3		Business Economics and Financial Analysis	3	0	0	3
4	ME604PE	Professional Elective-II	3	0	0	3
5	ME605OE	Open Elective – II	2	0	0	2
6	ME606PC	Heat Transfer Lab	0	0	2	1
7	ME607PC	Applied Manufacturing Laboratory	0	0	2	1
8	ME608PC	Kinematics and Dynamics Laboratory	0	0	2	1
9	HSC	Modelling and Drafting Laboratory	0	0	2	1
10	MESDC4	Troubleshooting of Mechanical Systems (Skill Development Course – 4)	0	0	2	1
11	MC610	Environmental Science	1	0	0	0
		Total Credits	**15**	**1**	**10**	**20**

Note: Students has to register for summer internship during III- II summer vacation (Refer to IV Year I Semester Course Structure) and acquire the credits allotted by doing 6 weeks Work-based Internship or Apprenticeship. Please refer R25 Academic Regulations for more information.

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	ME701PC	Finite Element Methods	3	0	0	3
2	ME702PC	Robotics and Artificial Intelligence	3	0	0	3
3	ME703PC	Industrial Engineering and Management	3	0	0	3
4	ME704PE	Professional Elective - III	3	0	0	3
5	ME705PE	Professional Elective – IV	3	0	0	3
6	ME706OE	Open Elective – III	2	0	0	2
7	ME707PC	Computer Aided Analysis Laboratory	0	0	2	1
8	ME708PC	Robotics and Artificial Intelligence Laboratory	0	0	2	1
9	ME709PC	Industry Oriented Mini Project/ Summer Internship	0	0	4**	2
		Total Credits	**17**	**0**	**08**	**21**

****Summer Internship Field based only

IV YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	ME801PE	Professional Elective – V	3	0	0	3
2	ME802PE	Professional Elective – VI	3	0	0	3
3	ME803PC	Project Work	0	0	28	14
		Total Credits	**6**	**0**	**28**	**20**

Professional Elective-I

1	ME511PE	Automobile Engineering
2	ME512PE	Mechanics of Composite Materials and Structures
3	ME513PE	Mechatronic Systems
4	ME514PE	AI/ ML in Mechanical Engineering
	ME515PE	Database Management Systems

Professional Elective-II

1	ME611PE	Power Plant Engineering
2	ME612PE	AI/ML for Design Analysis
3	ME613PE	CAD/ CAM
4	ME614PE	Additive Manufacturing
5	ME615PE	Biomechanical Engineering

Professional Elective-III

1	ME711PE	Computational Fluid Dynamics
2	ME712PE	Mechanical Vibrations
3	ME713PE	Drone Technologies
4	ME714PE	Embedded Systems and Programming
5	ME715PE	Artificial Neural Networks

Professional Elective – IV

1	ME721PE	Refrigeration and Air-Conditioning
2	ME722PE	Hydraulics and Pneumatics
3	ME723PE	MEMS
4	ME724PE	Production Planning and Control
5	ME725PE	Research Methodologies and IPR

Professional Elective-V

1	ME811PE	Electric and Hybrid Vehicles
2	ME812PE	Condition Monitoring and Fault Diagnosis
3	ME813PE	Design for Manufacturing and Assembly
4	ME814PE	Project Management
	ME815PE	Product Design and Development

Professional Elective-VI

1	ME821PE	Renewable Energy Sources
2	ME822PE	Plant Maintenance and Reliability Engineering
3	ME823PE	Micro Manufacturing
4	ME824PE	Total Quality Management
5	ME825PE	Prompt Engineering

OPEN ELECTIVES

Open Elective-I:

1	ME511OE	Optimization Methods for Engineers
2	ME512OE	Fundamentals of Robotic Systems
3	ME513OE	Alternate Fuels
4	ME514OE	Engineering Systems for Quantum Computing

Open Elective-II

1	ME611OE	Artificial Intelligence in Mechanical Engineering
2	ME612OE	Non-Conventional Sources of Energy
3	ME613OE	Quality Management
4	ME614OE	Engineering Materials

Open Elective-III:

1	ME711OE	Energy Conservation and Management
2	ME712OE	Digital Manufacturing
3	ME713OE	Strategic Management
4	ME714OE	Thermal Management of Electronics