



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

B.Tech - Mechanical Engineering Course Structure (R22) Applicable From 2022-23 Admitted Batch Structure Breakup

S.No	Category	Breakup of credits (Total 160 credits)
1	Humanities and Social Sciences including Management courses (HS)	10
2	Basic Sciences Courses (BS)	22.5
3	Engineering Sciences courses including Workshop, Drawing basics of electrical/mechanical/computer etc.(ES)	15.5
4	Professional Core courses (PC)	68
5	Professional Electives (PE)	18
6	Open Electives (OE)	9
7	Project work, Seminar and Internship in industry or elsewhere (PS)	17
8	Mandatory Courses	0
	TOTAL	160

I YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2210001	Matrix Algebra and Calculus	BS	3	1	0	4	40	60	100
2	2210008	Applied Physics	BS	3	1	0	4	40	60	100
3	2210501	Programming for Problem Solving	ES	3	0	0	3	40	60	100
4	2210372	Engineering workshop	ES	0	1	3	2.5	40	60	100
5	2210010	English for skill enhancement	HS	2	0	0	2	40	60	100
6	2210376	Elements of Mechanical Engineering	PC	0	0	2	1	50	-	50
7	2210071	Applied Physics Laboratory	BS	0	0	3	1.5	40	60	100
8	2210571	Programming for Problem Solving Laboratory	ES	0	0	2	1	40	60	100
9	2210073	English Language and Communicative Skills Laboratory	HS	0	0	2	1	40	60	100
10	2210021	Environmental Science	*MC	3	0	0	0	-	-	-
		Induction Programme								
Total Credits				11	2	14	20	370	480	850

I YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2220002	Differential Equations and Vector Calculus	BS	3	1	0	4	40	60	100
2	2220009	Engineering Chemistry	BS	3	1	0	4	40	60	100
3	2220371	Engineering Drawing Practice	ES	1	0	4	3	40	60	100
4	2220321	Engineering Mechanics	PC	3	0	0	3	40	60	100
5	2220322	Engineering Materials	PC	2	0	0	2	40	60	100
6	2220572	Data Structures Laboratory	ES	0	1	2	2	40	60	100
7	2220072	Engineering Chemistry Laboratory	BS	0	0	2	1	40	60	100
8	2220377	Fuels& lubricants Laboratory	PC	0	0	2	1	40	60	100
Total Credits				12	3	10	20	320	480	800

*MC - Satisfied/Unsatisfied

II YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2230323	Mechanics of Solids	PC	3	0	0	3	40	60	100
2	2230324	Material Science and Metallurgy	PC	3	0	0	3	40	60	100
3	2230325	Thermodynamics	PC	3	1	0	4	40	60	100
4	2230326	Fluid Mechanics and Hydraulics Machinery	PC	3	1	0	4	40	60	100
5	2230327	Production Technology	PC	3	0	0	3	40	60	100
6	2230378	Material Science and Mechanics of Solids Laboratory	PC	0	0	2	1	40	60	100
7	2230379	Fluid Mechanics and Hydraulics Machinery Laboratory	PC	0	0	2	1	40	60	100
8	2230380	Production Technology Laboratory	PC	0	0	2	1	40	60	100
9	2230023	Constitution of India	*MC	2	0	0	0	-	-	-
10	2230026	Machine learning	*MC	3	0	0	0	-	-	-
Total Credits				20	2	6	20	320	480	800

II YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2240202	Basic Electrical and Electronic Engineering	HS	2	0	0	2	40	60	100
2	2250328	Metrology and Machine Tools	PC	2	0	0	2	40	60	100
3	2240329	Kinematics of Machinery	PC	3	0	0	3	40	60	100
4	2240330	Thermal Engineering -I	PC	3	0	0	3	40	60	100
5	2240007	Probability Distributions and Complex Variables	BS	3	1	0	4	40	60	100
6	2240272	Basic Electrical and Electronic Engineering Laboratory	HS	0	0	2	1	40	60	100
7	2240573	Python Programming Laboratory	ES	0	1	2	2	40	60	100
8	2240381	Thermal Engineering Laboratory	PC	0	0	2	1	40	60	100
9	2240391	Field based Project	PS	0	0	4	2	50	-	50
10	2240022	Gender Sensitization	*MC	3	0	0	0	-	-	-
Total Credits				17	1	10	20	370	480	850

*MC - Satisfied/Unsatisfied

III YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2250331	Dynamics of Machinery	PC	3	1	0	4	40	60	100
2	2250332	Design of Machine Elements	PC	3	0	0	3	40	60	100
3	2250016	Business Economics and Financial Analysis	HS	3	0	0	3	40	60	100
4	2250	Open Elective -1	OE	3	0	0	3	40	60	100
5	22503	Professional Elective - I	PE	3	0	0	3	40	60	100
6	2250382	Kinematics and Dynamics of Machinery Laboratory	PC	0	0	2	1	40	60	100
7	2250383	Metrology and Machine Tools Laboratory	PC	0	0	2	1	40	60	100
8	2250384	Computer aided Machine Drawing	PC	0	0	2	1	40	60	100
9	2250392	Internship	PS	0	0	2	1	-	100	100
10	2250027	Data science with python	*MC	3	0	0	0	-	-	-
Total Credits				18	1	8	20	320	580	900

III YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2260333	Design of Transmission System	PC	3	1	0	4	40	60	100
2	2260334	Thermal engineering - II	PC	3	0	0	3	40	60	100
3	2260335	Heat Transfer	PC	3	0	0	3	40	60	100
4	2260	Open Elective - II	OE	3	0	0	3	40	60	100
5	2260	Professional Elective - II	PE	3	0	0	3	40	60	100
6	2260074	Advanced English communication skills Laboratory	HS	0	0	2	1	40	60	100
7	2260385	Heat transfer Laboratory	PC	0	0	2	1	40	60	100
8	2260024	Intellectual property rights	*MC	3	0	0	0	-	-	-
9	2260093	Industrial Oriented Mini project	PS	0	0	4	2	-	100	100
Total Credits				18	1	8	20	280	520	800

*MC - Satisfied/Unsatisfied

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2270336	CAD & AMT	PC	3	0	0	3	40	60	100
2	2270337	Instrumentation and Control Systems	PC	3	0	0	3	40	60	100
3	2270338	Finite Element Methods	PC	3	0	0	3	40	60	100
4	2270	Open Elective - III	OE	3	0	0	3	40	60	100
5	2270	Professional Elective - III	PE	3	0	0	3	40	60	100
6	2270386	CAD & AMT Laboratory	PC	0	0	2	1	40	60	100
7	2270387	Instrumentation and Control Systems and Production Drawing Laboratory	PC	0	0	2	1	40	60	100
8	2270394	Project Stage - I	PS	0	0	6	3	100	-	100
Total Credits				15	0	10	20	380	420	800

IV YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2080	Professional Elective - IV	PE	3	0	0	3	40	60	100
2	2080	Professional Elective - V	PE	3	0	0	3	40	60	100
3	2080	Professional Elective - VI	PE	3	0	0	3	40	60	100
4	2080395	Technical seminar	PS	0	0	4	2	100	-	100
5	2080396	Project Stage - II	PS	0	0	18	9	40	60	100
Total Credits				9	0	22	20	260	240	500

PROFESSIONAL ELECTIVE COURSES

PE I - Professional Elective I

S. No	Course Code	Course Title
1	2250351	Renewable Energy Sources
2	2250352	Electrical vehicles & Hybrid Vehicles
3	2250353	Operation research
4	2250354	Solar energy technology

PE II - Professional Elective II

S. No	Course Code	Course Title
1	2260355	Unconventional machining process
2	2260356	Metal forming technology
3	2260357	Production planning and control
4	2260358	Flexible Manufacturing Systems

PEIII - Professional Elective III

S. No	Course Code	Course Title
1	2270359	Refrigeration and Air Conditioner
2	2270360	Automobile Engineering
3	2270361	Computational Fluid Dynamics
4	2270362	Hydraulic and Pneumatics

PE IV - Professional Elective IV

S. No	Course Code	Course Title
1	2280363	Composite materials & mechanics
2	2280364	Robotics
3	2280365	Mechatronics
4	2280366	Mechanical Vibrations

PE V - Professional Elective V

S. No	Course Code	Course Title
1	2280367	Total quality management
2	2280368	Quality and reliability
3	2280369	Non destructive testing
4	2280370	Surface Engineering & Tribology

PE VI - Professional Elective VI

S. No	Course Code	Course Title
1	2280371	Fuzzy logic & Artificial neural networks
2	2280372	Industrial 4.0
3	2280373	Automation in manufacturing
4	2280374	Mechanical with AI&ML

OPEN ELECTIVE COURSES**Open Electives**

S. No	Course Code	Course Title
1	2250301	Elements Of Mechanical Engineering
2	2260302	Robotics
3	2270303	Elements of electric and hybrid vehicles