



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 (R20)
Applicable From 2020-21 Admitted Batch
Structure Breakup

S.No	Category	Breakup of credits (Total 160 credits)
1	Humanities and Social Sciences including Management courses (HSMC)	8
2	Basic Sciences Courses (BS)	23
3	Engineering Sciences courses including Workshop, Drawing basics of electrical/mechanical/computer etc.(ES)	22
4	Professional Core courses (PC)	66
5	Professional Electives (PE)	18
6	Open Electives (OE)	9
7	Project work, Seminar and Internship in industry or elsewhere (PS)	14
8	Mandatory Courses	0
	TOTAL	160

I YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
		Induction Programme		3 Weeks					-	-	-
1	2010001	Engineering Mathematics - I	BSC	3	1	0	4	4	30	70	100
2	2010007	Engineering Physics	BSC	3	1	0	4	4	30	70	100
3	2010501	Programming for Problem Solving	ESC	3	1	0	4	4	30	70	100
4	2010072	Engineering Physics Lab	BSC	0	0	3	3	1.5	30	70	100
5	2010571	Programming for Problem Solving Lab	ESC	0	0	3	3	1.5	30	70	100
6	2010371	Engineering Drawing Practice	ESC	1	0	4	5	3	30	70	100
Total Credits				10	3	10	23	18	180	420	600

I YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2020002	Engineering Mathematics - II	BSC	3	1	0	4	4	30	70	100
2	2020008	Engineering Chemistry	BSC	3	1	0	4	4	30	70	100
3	2020009	Communicative English	HSMC	2	0	0	2	2	30	70	100
4	2020502	Data Structures	ESC	3	0	0	3	3	30	70	100
5	2020073	Engineering Chemistry Lab	BSC	0	0	3	3	1.5	30	70	100
6	2020074	Communicative English Lab	HSMC	0	0	2	2	1	30	70	100
7	2020372	Engineering Workshop	ESC	1	0	3	4	2.5	30	70	100
8	2020572	Data Structures Lab	ESC	0	0	2	2	1	30	70	100
9	2020021	Environmental Science	*MC	3	0	0	3	0	-	-	-
Total Credits				15	2	10	27	19	240	560	800

*MC – Satisfied/Unsatisfied

L - Lecture periods, T - Tutorial periods, P - Practical periods

II YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2030005	Probability Distributions and Complex Variables	BSC	3	1	0	4	4	30	70	100
2	2030202	Basic Electrical and Electronic Engineering	HSMC	3	0	0	3	3	30	70	100
3	2030301	Engineering Mechanics	ESC	3	1	0	4	4	30	70	100
4	2030311	Thermodynamics	PCC	3	1	0	4	4	30	70	100
5	2030506	Python Programming	ESC	2	0	0	2	2	30	70	100
6	2030272	Basic Electrical and Electronic Engineering Lab	HSMC	0	0	2	2	1	30	70	100
7	2030373	Fuels and Lubricants Lab	PCC	0	0	2	2	1	30	70	100
8	2030374	Machine Drawing Practice	PCC	0	0	4	4	2	30	70	100
9	2030575	Python Programming Lab	ESC	0	0	2	2	1	30	70	100
10	2030022	Gender Sensitization	*MC	2	0	0	2	0	-	-	-
Total Credits				16	3	10	29	22	270	630	900

II YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2040312	Mechanics of Solids	PCC	3	1	0	4	4	30	70	100
2	2040313	Metallurgy and Material Science	PCC	3	0	0	3	3	30	70	100
3	2040314	Kinematics of Machinery	PCC	3	1	0	4	4	30	70	100
4	2040315	Thermal Engineering-I	PCC	3	0	0	3	3	30	70	100
5	2040316	Production Technology	PCC	3	0	0	3	3	30	70	100
6	2040375	Production Technology Lab	PCC	0	0	2	2	1	30	70	100
7	2040376	Material Science and Mechanics of Solids Lab	PCC	0	0	2	2	1	30	70	100
8	2040377	Thermal Engineering – Lab	PCC	0	0	2	2	1	30	70	100
9	2040023	Constitution of India	*MC	3	0	0	3	0	-	-	-
10	2040024	OOPS through C++	*MC	0	2	0	2	0	-	-	-
Total Credits				18	4	6	28	20	240	560	800

III YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2050317	Design of Machine Members - I	PCC	3	0	0	3	3	30	70	100
2	2050318	Metrology and Machine Tools	PCC	3	0	0	3	3	30	70	100
3	2050319	Dynamics of Machinery	PCC	3	0	0	3	3	30	70	100
4	2050320	Thermal Engineering - II	PCC	3	0	0	3	3	30	70	100
5	2050321	Fluid Mechanics and Hydraulics Machinery	PCC	3	0	0	3	3	30	70	100
6		Professional Elective - I	PEC	3	0	0	3	3	30	70	100
7	2050378	Kinematics and Dynamics of Machinery Lab	PCC	0	0	2	2	1	30	70	100
8	2050379	Metrology and Machine Tools Lab	PCC	0	0	2	2	1	30	70	100
9	2050380	Fluid Mechanics and Hydraulics Machinery Lab	PCC	0	0	2	2	1	30	70	100
10	2050386	Internship*	PROJ	0	0	2	2	1	30	70	100
11	2050025	Engineering System Design	*MC	2	0	0	2	0	-	-	-
12	2050026	Data science	*MC	3	0	0	3	0	-	-	-
Total Credits				23	0	8	31	22	300	700	1000

III YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Category	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2060010	Business Economics and Financial Analysis	PCC	3	0	0	3	3	30	70	100
2	2060322	Heat Transfer	PCC	3	1	0	4	4	30	70	100
3	2060323	Design of Machine Members -II	PCC	3	0	0	3	3	30	70	100
4		Open Elective – I	OEC	3	0	0	3	3	30	70	100
5		Professional Elective - II	PEC	3	0	0	3	3	30	70	100
6	2060075	Advanced English Communication Skills Lab	HSMC	0	0	2	2	1	30	70	100
7	2060381	Heat Transfer Lab	PCC	0	0	3	3	1.5	30	70	100
8	2060382	CADD and MAT Lab	PCC	0	0	3	3	1.5	30	70	100
9	2060027	Machine Learning	*MC	3	0	0	3	0	-	-	-
10	2060028	Professional Ethics	*MC	2	0	0	2	0	-	-	-
Total Credits				20	1	8	29	20	240	560	800

***Students have to complete internship in II Year- II Semester Summer break, Evaluation is carried in III-I semester.**

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1	2070323	CAD/ CAM	PCC	3	0	0	3	3	30	70	100
2	2070324	Instrumentation and Control Systems	PCC	3	0	0	3	3	30	70	100
3		Open Elective - II	OEC	3	0	0	3	3	30	70	100
4		Professional Elective - III	PEC	3	0	0	3	3	30	70	100
5		Professional Elective - IV	PEC	3	0	0	3	3	30	70	100
6	2070383	CAD/CAM Lab	PCC	0	0	2	2	1	30	70	100
7	2070384	Instrumentation and Control Systems Lab	PCC	0	0	2	2	1	30	70	100
8	2070385	Industry Oriented Mini Project	PROJ	0	0	4	4	2	100	-	100
Total Credits				15	0	10	25	19	310	490	800

IV YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Total Contact Hour	Credits	Scheme of Examination Maximum Marks		
				L	T	P			Internal (CIE)	External (SEE)	Total
1		Open Elective - III	PEC	3	0	0	3	3	30	70	100
2		Professional Elective - V	PEC	3	0	0	3	3	30	70	100
3		Professional Elective - VI	OEC	3	0	0	3	3	30	70	100
4	2080386	Technical seminar	PROJ	0	0	2	2	1	30	70	100
5	2080387	Major Project	PROJ	0	0	20	20	10	30	70	100
Total Credits				9	0	20	31	20	150	350	500

****Students have to complete industry oriented mini project in III Year- II Semester Summer break, Evaluation is carried in IV-I semester.**

PROFESSIONAL ELECTIVE COURSES

PE I - Professional Elective I

S.No	Course Code	Course Title
1	2050341	Unconventional Machining Process
2	2050342	Total Quality Management
3	2050343	Operational Research
4	2050344	Non Destructive Testing

PE II – Professional Elective II

S.No	Course Code	Course Title
1	2060345	Machine Tool Design
2	2060346	Finite Element Methods
3	2060347	Mechatronics
4	2060348	Mechanical Vibrations

PEIII – Professional Elective III

S.No	Course Code	Course Title
1	2070349	Renewable Energy Sources
2	2070350	Robotics
3	2070351	Computational Fluid Dynamics
4	2070352	Turbo Machinery

PE IV - Professional Elective IV

S.No	Course Code	Course Title
1	2070353	Refrigeration and Air Conditioner
2	2070354	Automobile Engineering
3	2070355	I.C.Engines and Gas Turbines
4	2070356	Jet Propulsion & Rocket Engineering

PE V - Professional Elective V

S.No	Course Code	Course Title
1	2080357	Additive Manufacturing Technology
2	2080358	Flexible Manufacturing System
3	2080359	Automation In Manufacturing
4	2080360	Plant Layout And Material Handling

PE VI - Professional Elective VI

S.No	Course Code	Course Title
1	2080361	Powder Metallurgy
2	2080362	Composite Materials
3	2080363	Surface Engineering
4	2080364	Nano Materials

OPEN ELECTIVE COURSES

Open Electives

S.No	Course Code	Course Title
1	.Open Elective I	2060302- Elements Of Mechanical Engineering
2	Open Elective II	2070303- Fabrication Process
3	Open Elective III	2080304- Alternate Energy Sources