



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 -Electrical and Electronics Engineering
Course Structure (MLRS-R24)
Applicable From 2024-25 Admitted
Batch Structure Breakup

S.No	Category	Break up of credits (Total 160 credits)
1	Humanities and Social Sciences including Management Courses (HSMC)	7
2	Basic Sciences Courses (BS) including Mathematics, Physics and Chemistry	20
3	Engineering Science Courses (ES), including Workshop, Graphics basics of Electrical/Mechanical/Computer Engineering.	19
4	Professional Core Courses (PC) relevant to the chosen specialization / branch	63
5	Professional Electives (PE), relevant to the chosen specialization / branch	18
6	Open Electives (OE) from other technical and / or emerging areas	9
7	Experiential Learning/ Skill Development Courses (SDC) / Field Based Project/ Internship/ Project work (PROJ) / Seminar	24
8	Mandatory Courses (MC) / Value Added Courses (VAC)	Non-Credit
TOTAL		160

I YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2410001	Matrices and Calculus	BS	3	1	0	4	40	60	100
2	2410008	Applied Physics	BS	3	0	0	3	40	60	100
3	2410501	Problem Solving using C and C++	ES	3	0	0	3	40	60	100
4	2410010	English for Skill Enhancement	HSMC	3	0	0	3	40	60	100
		Laboratory								
1	2410372	Engineering Workshop	ES	0	1	4	3	40	60	100
2	2410071	Applied Physics Laboratory	BS	0	0	2	1	40	60	100
3	2410571	Problem Solving using C and C++ Laboratory	ES	0	0	2	1	40	60	100
4	2410073	English Language and Communications Skills Laboratory	HSMC	0	0	2	1	40	60	100
		Skill Development Course								
1	2410596	Web Application Development	SDC	0	0	2	1	40	60	100
		Mandatory Course								
1		Foreign Language*	MC	0	0	0	0	-	-	-
		Induction Program	-	-	-	-	-	-	-	-
Total Credits				12	2	12	20	360	540	900

- Students can choose any one of the foreign language from the given list
 - 24X0FL1 French
 - 24X0FL2 German
 - 24X0FL3 Spanish
 - 24X0FL4 Korean

I YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2420002	Differential Equations and Vector Calculus	BS	3	1	0	4	40	60	100
2	2420009	Engineering Chemistry	BS	3	0	0	3	40	60	100
3	2420502	Essentials of Problem Solving Using Python	ES	3	0	0	3	40	60	100
4	2420221	Electrical Engineering	PC	3	0	0	3	40	60	100
		Laboratory								
1	2420371	Computer Aided Engineering Graphics	ES	1	0	4	3	40	60	100
2	2420072	Engineering Chemistry Laboratory	BS	0	0	2	1	40	60	100
3	2420276	Electrical Engineering Laboratory	PC	0	0	2	1	40	60	100
4	2420572	Essentials of Problem Solving Using Python Laboratory	ES	0	0	2	1	40	60	100
		Skill Development								
1	2420027	Public Speaking Skills	SDC	0	0	2	1	40	60	100
		Mandatory								
1	2420026	Yoga and Inner Engineering	MC	0	0	0	0	-	-	-
Total Credits				13	1	12	20	360	540	900

*MC-Satisfactory/Unsatisfactory, SDC: Skill Development Course

II YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2430224	Electro Magnetic Fields	PC	2	0	0	2	40	60	100
2	2430222	Network Analysis	PC	3	0	0	3	40	60	100
3	2430460	Analog Electronics	PC	3	0	0	3	40	60	100
4	2430223	DC Machines and Transformers	PC	3	0	0	3	40	60	100
5	2430507	Data Structures	ES	3	0	0	3	40	60	100
6	243ExL1	Design and Innovation	EL	0	0	2	1	40	60	100
		Laboratory								
1	2430277	Network Analysis and Simulation Laboratory	PC	0	0	2	1	40	60	100
2	2430278	DC Machines Laboratory	PC	0	0	2	1	40	60	100
3	2430575	Data Structures Laboratory using Python	ES	0	0	2	1	40	60	100
		Skill Development								
1	2430455	PCB Fabrication	SDC	0	0	2	1	40	60	100
		Project								
1	2430291	Internship-1*	PS	0	0	2	1	100	-	100
		Mandatory								
1		Indian Knowledge System*	MC	0	0	0	0	-	-	-
Total Credits				14	0	12	20	400	600	1000

*MC-Satisfactory/Unsatisfactory, SDC: Skill Development Course

*Students must complete internship-1 during 1-2 semester break (minimum 2 weeks)

***Students can choose any one of the following course

- i) 24XIKS1: Indian Science, Engineering and Technology
- ii) 24XIKS2: Fundamentals and Applications of Vedic Mathematics
- iii) 24XIKS3: Indian Health, Wellness and Psychology- including Ayurved
- iv) 24XIKS4: Indian Town Planning and Architecture

II YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2440003	Numerical Methods and Complex Variables	BS	3	1	0	4	40	60	100
2	2440225	AC Machines	PC	3	0	0	3	40	60	100
3	2440461	Digital Electronics	PC	3	0	0	3	40	60	100
4	2440226	Control Systems	PC	2	1	0	3	40	60	100
5	2440227	Electrical Power Generation	PC	2	0	0	2	40	60	100
6	244ExL2	Prototype/Model development and Entrepreneurship	EL	0	0	2	1	40	60	100
		Laboratory								
1	2440279	AC Machines Laboratory	PC	0	0	2	1	40	60	100
2	2440280	Control Systems Laboratory	PC	0	0	2	1	40	60	100
3	2440482	Analog and Digital Electronics Laboratory	PC	0	0	2	1	40	60	100
		Skill Development Course								
1	2440574	Data visualization-Power Bi	SDC	0	0	2	1	40	60	100
		Mandatory Course								
1	2440021	Environmental Science	*MC	0	0	0	0	-	-	-
Total Credits				13	2	10	20	400	600	1000

*MC-Satisfactory/Unsatisfactory, SDC: Skill Development Course

III YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2450228	Power Electronics	PC	3	1	0	4	40	60	100
2	2450428	Microprocessors and Microcontrollers	PC	3	0	0	3	40	60	100
3	2450229	Electrical Transmission and Distribution	PC	3	0	0	3	40	60	100
4		Professional Elective – I	PE	3	0	0	3	40	60	100
5		Open Elective – I	OE	3	0	0	3	40	60	100
		Laboratory								
1	2450475	Microprocessors and Microcontrollers Laboratory	PC	0	0	2	1	40	60	100
2	2450281	Power Electronics Laboratory	PC	0	0	2	1	40	60	100
3	2450592	OOPS through JAVA Laboratory	ES	0	0	2	1	40	60	100
		Project								
1	2450292	Field Based Project	PS	0	0	2	1	100	-	100
		Mandatory								
1	2450022	Gender Sensitization	MC	0	0	0	0	-	-	-
Total Credits				15	1	8	20	420	480	900

*MC-Satisfactory/Unsatisfactory

*Students must complete Field Based Project during 2-2 semester break (minimum 2 weeks)

III YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2460230	Power Electronics Applications to Renewable Energy systems	PC	3	0	0	3	40	60	100
2	2460231	Power System Analysis	PC	3	1	0	4	40	60	100
3	2460232	Electrical Measurements and Instrumentation	PC	3	0	0	3	40	60	100
4		Professional Elective - II	PE	3	0	0	3	40	60	100
5		Open Elective – II	OE	3	0	0	3	40	60	100
		Laboratory								
1	2460479	Internet of Things Laboratory	PC	0	0	2	1	40	60	100
2	2460282	Simulation of Power Electronics Applications to Renewable Energy systems Laboratory	PC	0	0	2	1	40	60	100
3	2460483	Electrical Measurements and Instrumentation Laboratory	PC	0	0	2	1	40	60	100
		Skill Development Course								
1	2460293	Introduction to Computer Aided Electrical Drawing	SDC	0	0	2	1	40	60	100
		Mandatory								
1	2460023	Constitution of India	MC	0	0	0	0	-	-	-
Total Credits				15	1	8	20	360	540	900

*MC-Satisfactory/Unsatisfactory, SDC: Skill Development Course

IV YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination on Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2470233	Power System Operation and Control	PC	3	0	0	3	40	60	100
2	2470234	Power System Protection	PC	2	0	0	2	40	60	100
3		Professional Elective – III	PE	3	0	0	3	40	60	100
4		Professional Elective - IV	PE	3	0	0	3	40	60	100
5		Open Elective – III	OE	3	0	0	3	40	60	100
		Laboratory								
1	2470284	Electrical Systems Simulation Laboratory	PC	0	0	2	1	40	60	100
2	2470285	Power System Laboratory	PC	0	0	2	1	40	60	100
		Project								
1	2470294	Project Stage - I	PS	0	0	6	3	100	-	100
2	2470295	Internship-2*	PS	0	0	2	1	100	-	100
		Mandatory								
1	2470025	Human Values and Professional Ethics	*MC	0	0	0	0	-	-	-
Total Credits				14	0	12	20	520	480	1000

*MC-Satisfactory/Unsatisfactory

***Students must complete internship-2 during 3-2 semester break (minimum 2 weeks)**

IV YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Hours per week			Credits	Scheme of Examination on Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
		Theory								
1	2480010	Business Economics and Financial Analysis	HSMC	3	0	0	3	40	60	100
2		Professional Elective- V	PE	3	0	0	3	40	60	100
3		Professional Elective-VI	PE	3	0	0	3	40	60	100
		Project								
1	2480296	Technical Seminar	PS	0	0	4	2	100	-	100
2	2480297	Project Stage-II	PS	0	0	18	9	40	60	100
Total Credits				9	0	22	20	260	240	500

Professional Elective (PE) Courses

PEI-Professional Elective I

S.No.	CourseCode	CourseTitle
1	2450235	Special Electrical Machines
2	2450236	Wind and Solar Energy Systems
3	2450454	Principles of Signals and Systems
4	2450237	Programmable Logic Controllers

PEII-Professional Elective II

S.No.	CourseCode	CourseTitle
1	2460238	Power Semiconductor Drives
2	2460239	IoT Applications in Electrical Engineering
3	2460240	HVDC Transmission
4	2460241	Renewable Energy Systems

PEIII-Professional Elective III

S.No.	CourseCode	CourseTitle
1	2460242	Industrial Electrical Systems
2	2460243	Smart Grid Technologies
3	2460244	Electric and Hybrid Vehicles
4	2460245	Advanced Control of Electric Drives

PEIV- Professional Elective IV

S.No.	CourseCode	CourseTitle
1	2470246	Modern Control Theory
2	2470455	VLSI Design
3	2470247	Computer Aided Electrical Machine Design
4	2470456	Basics of Digital Signal Processing

PEV –Professional Elective V

S.No.	CourseCode	CourseTitle
1	2480248	Power Quality & Facts
2	2480249	Advanced Power Systems
3	2480457	Embedded Systems Applications
4	2480255	Electrical Safety Management

PEVI- Professional Elective VI

S.No.	CourseCode	CourseTitle
1	2480251	Cyber-Physical Systems
2	2480252	Electrical Distribution Systems
3	2480253	Machine Learning Applications in Electrical Engineering
4	2480254	Digital Control Systems