

**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 – Computer Science and Engineering - Artificial Intelligence & Machine Learning
COURSE STRUCTURE (R24)
Applicable From 2024-25 Admitted Batch
Structure Breakup**

S.No	Category	Breakup of credits (Total 160 credits)
1	Humanities and social sciences including management courses (HSMC)	7
2	Basic Sciences Courses (BS)	20
3	Engineering sciences courses including workshop, drawing basics of electrical/mechanical/computer etc.(ES)	29
4	Skill Development Course(SDC), Professional core courses (PC)	58
5	Professional Electives (PE)	18
6	Open Electives (OE)	9
7	Experiential Learning(EL), Project work, seminar and internship in industry or elsewhere (PS)	19
8	Mandatory Courses	-
	TOTAL	160

I YEAR I SEMESTER (I SEMESTER)

S. No.	Course Code	Course Title	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 Communication 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

- i) 24X0FL1 French
- ii) 24X0FL2 German
- iii) 24X0FL3 Spanish
- iv) 24X0FL4 Korean

I YEAR II SEMESTER (II SEMESTER)

S. No.	Course Code	Course Title	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	2420201	Principles of Electrical and Electronics Engineering	ES	3	0	0	3	40	60	100
4	2420502	Essentials of Problem Solving using Python	ES	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	2420271	Principles of Electrical and Electronics Engineering Laboratory	ES	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 Course								
1	2420026	Yoga & Inner Engineering	MC	0	0	0	0	-	-	-
Total Credits				13	1	12	20	360	540	900

II YEAR I SEMESTER (III SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2436703	Discrete Mathematics	PC	2	0	0	2	40	60	100
2	2430510	Operating systems	PC	3	0	0	3	40	60	100
3	2430505	Software Engineering	PC	2	0	0	2	40	60	100
4	2430005	Mathematical and Statistical Foundations	BS	3	1	0	4	40	60	100
5	2430507	Data Structures	ES	3	0	0	3	40	60	100
	243ExL1	Design and Innovation	EL	0	0	2	1	40	60	100
		Laboratory								
1	2430574	Data visualization-Power BI	PC	0	0	2	1	40	60	100
2	2430577	Operating systems Laboratory	PC	0	0	2	1	40	60	100
3	2430575	Data Structures laboratory Using Python	ES	0	0	2	1	40	60	100
	2430588	Internship-1 *	PS	0	0	2	1	100	-	100
		Skill Development								
1	2430598	Parallel Computation - RUST	SDC	0	0	2	1	40	60	100
		Mandatory Course								
1		Indian Knowledge System*	MC	0	0	0	0	-	-	-
Total Credits				13	1	12	20	500	600	1100

• **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

****students have to complete internship in I year-II semester summer break with minimum 2 Weeks duration.**

II YEAR II SEMESTER(IV SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2440512	Artificial Intelligence	PC	3	0	0	3	40	60	100
2	2440503	Database Management Systems	PC	3	0	0	3	40	60	100
3	2446606	Computer System Architecture	PC	3	1	0	4	40	60	100
4	2440508	Design and Analysis of Algorithms	PC	2	0	0	2	40	60	100
5	2440511	OOPS through JAVA	ES	3	0	0	3	40	60	100
6	244EXL2	Prototype/model development and Entrepreneurship	EL	0	0	2	1	40	60	100
		Laboratory								
1	2440581	Artificial Intelligence Laboratory	PC	0	0	2	1	40	60	100
2	2440573	Database Management Systems Laboratory	PC	0	0	2	1	40	60	100
3	2440576	Design and Analysis of Algorithms through JAVA Laboratory	ES	0	0	2	1	40	60	100
		Skill Development								
1	2440597	NO SQL Data Bases (MONGO DB)	PS	0	0	2	1	40	60	100
		Mandatory Course								
1	2440021	Environmental Science	MC	0	0	0	0	-	-	-
Total Credits				14	1	10	20	400	600	1000

III YEARISEMESTER(V SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2450513	Computer Networks	PC	3	1	0	4	40	60	100
2	2450504	Formal Languages and Automata Theory	PC	3	0	0	3	40	60	100
3	2450515	Machine Learning	PC	3	0	0	3	40	60	100
4		Professional Elective-I	PC	3	0	0	3	40	60	100
5		Open Elective- I	OE	3	0	0	3	40	60	100
		Laboratory								
1	2450579	Computer Networks Laboratory	PC	0	0	2	1	40	60	100
2	2450585	Devops Laboratory	PC	0	0	2	1	40	60	100
3	2450583	Machine Learning Laboratory	PC	0	0	2	1	40	60	100
		Project								
1	2450587	Field Based Project *	PS	0	0	2	1	100	-	100
		Mandatory Course								
1	2450022	Gender Sensitization	MC	0	0	0	0	-	-	-
Total Credits				15	1	8	20	420	480	900

****students have to complete Field based project in II year-II semester summer break with minimum 2 Weeks duration.**

III YEAR I SEMESTER (VI SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2460518	Data Mining	PC	3	0	0	3	40	60	100
2	2466601	Soft Computing	PC	3	1	0	4	40	60	100
3	24X0517	Compiler Design	PC	3	1	0	4	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	2466675	Augmented Reality and virtual Reality laboratory	PC	0	0	2	1	40	60	100
2	2466671	Soft Computing Laboratory	PC	0	0	2	1	40	60	100
3	2460586	Data Mining Laboratory	PC	0	0	2	1	40	60	100
		Mandatory Course								
1	2460023	Constitution of India	MC	0	0	0	0	-	-	-
Total Credits				15	2	6	20	320	480	800

IV YEARISEMESTER(VII SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2470541	Deep Learning	PC	2	0	0	2	40	60	100
2	2470544	Full Stack Development	PC	3	0	0	3	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	2476672	Deep Learning Laboratory	PC	0	0	2	1	40	60	100
2	2470580	Full Stack Development Laboratory	PC	0	0	2	1	40	60	100
	2470594	Internship –II **	PS	0	0	2	1	100	-	100
		Project								
1	2470590	Project Stage –I	PS	0	0	6	3	100	-	100
		Mandatory								
	2470025	Human Values and Professional Ethics	MC	0	0	0	0	-	-	-
Total Credits				14	0	12	20	480	420	900

****students have to complete internship in III year-II semester summer break with minimum 2 Weeks duration.**

IV YEARII SEMESTER (VIII SEMESTER)

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		Theory								
1	2480010	Business Economics and Financial Analysis	HSM C	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	2480589	Technical Seminar	PS	0	0	4	2	100	-	100
2	2480591	Project Stage-II	PS	0	0	18	9	40	60	100
Total Credits				9	0	22	20	260	240	500

PE I-Professional Elective I

S. No	Course Code	Course Title
1	24X6641	Ethical Hacking
2	24X0529	Data Science
3	24X6604	Artificial Neural Networks
4	24X0523	Internet of Things

PEII-Professional Elective II

S. No	Course Code	Course Title
1	24X0516	Cryptography and Network Security
2	24X6646	Information Retrieval Systems
3	24X6644	Digital Image Processing
4	24X0527	IoT Communication Protocols

PEIII– Professional Elective III

S. No	Course Code	Course Title
1	24X0528	Web Security
2	24X0533	Data Analytics
3	24X6603	Expert Systems
4	24X0531	IoT System Architectures

PEIV-Professional Elective IV

S. No	Course Code	Course Title
1	24X0540	Block chain Technology
2	24X0532	Cloud Computing
3	24X0538	Computer Vision &Robotics
4	24X6647	5G&IoTTechnology

PEV-Professional Elective V

S. No	Course Code	Course Title
1	24X6645	Cyber Crime Investigation &Digital Forensics
2	24X0548	Social Network Analysis
3	24X0549	Quantum Computing
4	24X6652	Industrial IoT

PEVI-Professional Elective VI

S. No	Course Code	Course Title
1	24X0536	Cloud Security
2	24X0530	Natural Language Processing
3	24X0542	Cognitive Computing
4	24X6654	Generative AI

