



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 (Data Science)

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)	26
4	Skill Development Course (SDC), Professional Core courses (PC)	61
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

Department of Computer Science and Engineering (Data Science)

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

Department of Computer Science and Engineering (Data Science)

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	2	1	40	60	100
4	2420572	Essentials of Problem Solving using Python Laboratory	ES	0	0	2	1	40	60	100
		Skill Development Course								
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

Department of Computer Science and Engineering (Data Science)

IIYEAR-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	2430505	Software Engineering	PC	2	0	0	2	40	60	100
3	2430503	Database Management Systems	PC	3	0	0	3	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	2430573	Database Management 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-I *	PS	0	0	2	1	100	-	100
		Skill Development Course								
1	2430598	Parallel Computation - RUST	SDC	0	0	2	1	40	60	100
		MANDATORY								
		Indian knowledge systems	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.**

Department of Computer Science and Engineering (Data Science)

IIYEAR–IISEMESTER (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	2446606	Computer system Architecture	PC	3	1	0	4	40	60	100
2	2440510	Operating systems	PC	3	0	0	3	40	60	100
3	2440508	Design and Analysis of Algorithms	PC	2	0	0	2	40	60	100
4	2440511	OOPS Through JAVA	ES	3	0	0	3	40	60	100
5	2440504	Formal Languages and Automata Theory	PC	3	0	0	3	40	60	100
4	244ExL2	Prototype/model development and Entrepreneurship	EL	0	0	2	1	40	60	100
		LABORATORY								
1	2440577	Operating systems Laboratory	PC	0	0	2	1	40	60	100
2	2446774	Design and Analysis of Algorithms Laboratory	ES	0	0	2	1	40	60	100
3	2440592	Oops through java Laboratory	PC	0	0	2	1	40	60	100
		Skill Development								
1	2440597	NO SQL Data Bases (MONGO DB)	SDC	0	0	2	1	40	60	100
		MANDATORY								
1	2440021	Environmental Science	MC	0	0	0	0	--	--	--
Total Credits				14	1	10	20	400	600	1000

Department of Computer Science and Engineering (Data Science)

III YEAR - I SEMESTER (V Semester)

S. No.	Course Code	Course Title	Course Area	Periods 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	2450529	Data Science	PC	3	0	0	3	40	60	100
3	2450515	Machine Learning	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	2450583	Machine Learning Laboratory	PC	0	0	2	1	40	60	100
2	2450579	Computer Networks Lab	PC	0	0	2	1	40	60	100
3	2456770	Data Science Lab	PC	0	0	2	1	40	60	100
		PROJECT								
1	2450587	Field Based Project *	PS	0	0	2	1	100	-	100
		MANDATORY								
1	24X0022	Gender Sensitization	MC	0	0	0	0	-	-	-
TOTAL				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.**

Department of Computer Science and Engineering (Data Science)

III YEAR – II SEMESTER (VI semester)

S. No.	Course Code	Course Title	Course Area	Periods Per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		THEORY								
1	2460512	Artificial Intelligence	PC	3	0	0	3	40	60	100
2	2460516	Cryptography and Network Security	PC	3	1	0	4	40	60	100
3	2460517	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	2460584	Compiler Design Laboratory	PC	0	0	2	1	40	60	100
2	2460582	Cryptography and Network Security Laboratory	PC	0	0	2	1	40	60	100
3	2460581	Artificial Intelligence Laboratory	PC	0	0	2	1	40	60	100
		MANDATORY								
1	2460023	Constitution of India	MC	0	0	0	0	-	-	-
TOTAL				15	2	6	20	320	480	800

IV YEAR–ISEMESTER (VII semester)

S. No.	Course Code	Course Title	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	External (SEE)	Total
		THEORY								
1	2470537	Business intelligence	PC	2	0	0	2	40	60	100
2	2476701	Data Warehousing and Data Mining	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								
6	2476771	Data Warehousing and Data Mining Laboratory	PC	0	0	2	1	40	60	100
7	2476772	Business intelligence Laboratory	PC	0	0	2	1	40	60	100
	2470588	Internship	PS	0	0	2	1	100	-	100
		PROJECT								
8	2470590	Project Stage - I	PS	0	0	6	3	100	-	100
		MANDATORY								
	2470025	Human Values and Professional Ethics	MC	0	0	0	0	-	-	-
TOTAL				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 YEAR–ISEMESTER (VII I semester)

S. No.	Course Code	Course Title	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIA)	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
4	2480589	PROJECT							-	100
		Technical Seminar	PS	0	0	4	2	100		
5	2480591	Project Stage – II	PS	0	0	18	9	40	60	100
TOTAL				9	0	22	20	260	240	500

PEI-Professional Elective I

S. No	Course Code	Course Title
1	24X0534	Mobile Computing
2	24X6702	Cyber Laws
3	24X0539	Design Patterns
4	24X0523	Internet of Things

PEII-Professional Elective - II

S. No	Course Code	Course Title
1	24X6655	Introduction to Soft Computing
2	24X6656	Introduction to DevOps
3	24X6641	Ethical Hacking
4	24X0530	Natural language Processing

PEIII-Professional Elective III

S. No	Course Code	Course Title
1	24X0521	Software Testing Methodologies
2	24X0544	Full Stack Development
3	24X6648	Reinforcement Learning
4	24X6704	Linux Programming

PEIV-Professional Elective

S. No	Course Code	Course Title
1	24X0533	Data Analytics
2	24X6603	Expert Systems
3	24X0522	Distributed Systems
4	24X0535	Mobile Application Development

PEV-Professional Elective V

S. No	Course Code	Course Title
1	24X0532	Cloud Computing
2	24X0538	Computer Vision & Robotics
3	24X6645	Cyber Crime Investigation & Digital Forensics
4	24X6706	Exploratory Data Analysis

PEVI-Professional Elective VI

S. No		Course Title
1	24X6707	Network Programming
2	24X0528	Web Security
3	24X0540	Blockchain Technology
4	24X6708	Parallel and Distributed Computing

