



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. in CSE (Data Science) COURSE STRUCTURE & SYLLABUS (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)	10
2	Basic Sciences Courses (BS)	22
3	Engineering Sciences courses including workshop, drawing basics of electrical/mechanical/computer etc.(ES)	19
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)	14
8	Mandatory Courses(MC)	-
	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	2010001	Engineering Mathematics - I	BS	3	1	0	4	30	70	100
2	2010006	Applied Physics	BS	3	1	0	4	30	70	100
3	2010501	Programming for Problem Solving	ES	3	1	0	4	30	70	100
4	2010009	Communicative English	HSMC	2	0	0	2	30	70	100
5	2010071	Applied Physics Lab	BS	0	0	3	1.5	30	70	100
6	2010571	Programming for Problem Solving Lab	ES	0	0	3	1.5	30	70	100
7	2010074	Communicative English Lab	HSMC	0	0	2	1	30	70	100
Total Credits				11	3	8	18	210	490	700

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	2020002	Engineering Mathematics - II	BS	3	1	0	4	30	70	100
2	2020008	Engineering Chemistry	BS	3	1	0	4	30	70	100
3	2020502	Data Structures	ES	3	0	0	3	30	70	100
4	2020371	Engineering Drawing practice	ES	1	0	4	3	30	70	100
5	2020073	Engineering Chemistry Lab	BS	0	0	3	1.5	30	70	100
6	2020572	Data Structures Lab	ES	0	0	2	1	30	70	100
7	2020372	Engineering Workshop	ES	1	0	3	2.5	30	70	100
8	2020021	Environmental Science	MC	2	0	0	0	-	-	-
Total Credits				13	2	12	19	210	490	700

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	2036701	Database Management Systems	PC	3	0	0	3	30	70	100
2	2036702	Operating Systems	PC	3	0	0	3	30	70	100
3	2036703	Digital Logic Design & computer Organization	PC	3	1	0	4	30	70	100
4	2030004	Probability & Statistics	BS	3	0	0	3	30	70	100
5	2036704	Python Programming	PC	3	0	0	3	30	70	100
6	2036771	Operating Systems Lab	PC	0	0	3	1.5	30	70	100
7	2036772	Database Management Systems Lab	PC	0	0	3	1.5	30	70	100
8	2036773	Python Programming Lab	PC	0	0	3	1.5	30	70	100
9	2030025	Gender Sensitization & Community Participation	MC	2	0	0	0	-	-	-
Total Credits				17	1	9	20.5	240	560	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	2046705	Discrete Mathematics	PC	3	1	0	4	30	70	100
2	2040201	Basic Electrical Engineering	ES	3	0	0	3	30	70	100
3	2040010	Business Economics and Financial Analysis	HSMC	3	0	0	3	30	70	100
4	2046706	JAVA Programming	PC	3	0	0	3	30	70	100
5	2046707	Introduction to Data Science	PC	3	0	0	3	30	70	100
6	2046708	Data Warehousing & Data Mining	PC	2	0	0	2	30	70	100
7	2030271	Basic Electrical Engineering Lab	ES	0	0	2	1	30	70	100
8	2046774	Data Warehousing & Data Mining Lab	PC	0	0	2	1	30	70	100
9	2046775	JAVA Programming Lab	PC	0	0	3	1.5	30	70	100
10	2040023	Constitution of India	MC	2	0	0	0	-	-	-
Total Credits				19	1	7	21.5	270	630	900

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	2056709	Computer networks	PC	3	0	0	3	30	70	100
2	2056710	Machine Learning	PC	3	0	0	3	30	70	100
3	2056711	Design and Analysis of Algorithms	PC	3	0	0	3	30	70	100
4	2056712	Software Engineering	PC	3	0	0	3	30	70	100
5		Open elective-I	OE	3	0	0	3	30	70	100
6	2056776	Computer networks Lab	PC	0	0	3	1.5	30	70	100
7	2056777	Machine Learning Lab using Pyhon	PC	0	0	3	1.5	30	70	100
8	2056778	Case Tools Lab	PC	0	0	2	1	30	70	100
9	2056783	Internship*	PS	0	0	2	1	30	70	100
10	2020024	Intellectual Property Rights	MC	2	0	0	0	-	-	-
Total Credits				17	0	10	20	270	630	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	2066713	Automata Theory & Language Processors	PC	3	0	0	3	30	70	100
2	2066714	Data Analytics	PC	3	0	0	3	30	70	100
3	2066715	Web Technology	PC	3	0	0	3	30	70	100
4		Professional Elective I	PE	3	0	0	3	30	70	100
5		Open Elective II	OE	3	0	0	3	30	70	100
6	2066779	Web Technology Lab	PC	0	0	3	1.5	30	70	100
7	2066780	Data analytics Lab	PC	0	0	3	1.5	30	70	100
8	2060075	Advanced English Communication Lab	HSMC	0	0	2	1	30	70	100
9		Professional Ethics	MC	2	0	0				
Total Credits				17	0	8	19	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			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2076717	Fundamentals of Management	HSMC	3	0	0	3	30	70	100
2	2076716	Business intelligence	PC	3	0	0	3	30	70	100
3	2076717	Deep Learning	PC	3	0	0	3	30	70	100
4		Professional Elective II	PE	3	0	0	3	30	70	100
5		Professional Elective III	PE	3	0	0	3	30	70	100
6		Open Elective III	OE	3	0	0	3	30	70	100
7	2076781	Business intelligence Lab	PC	0	0	2	1	30	70	100
8	2076782	Deep learning lab	PC	0	0	2	1	30	70	100
9	2076784	Industry Oriented Mini Project**	PS	0	0	4	2	30	70	100
Total Credits				18	0	8	22	270	630	900

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		Professional Elective IV	PE	3	0	0	3	30	70	100
2		Professional Elective V	PE	3	0	0	3	30	70	100
3		Professional Elective VI	PE	3	0	0	3	30	70	100
4	2086785	Technical Seminar	PS	0	0	2	1	30	70	100
5	2086786	Major Project	PS	0	0	20	10	30	70	200
Total Credits				9	0	22	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.**

PE I - Professional Elective I

S.No	Course Code	Course Title
1	2066741	Embedded Systems
2	2066742	Computer Graphics
3	2066743	Parallel Computing
4	2066744	Artificial Intelligence

PE II - Professional Elective II

S.No	Course Code	Course Title
1	2076745	Linux Programming
2	2076746	Distributed System
3	2076747	Cryptography and Network Security
4	2076748	Software project Management

PEIII – Professional Elective III

S.No	Course Code	Course Title
1	2076749	Wireless Sensor Networks
2	2076750	Design Thinking
3	2076751	Cyber Forensics
4	2076752	Image and Video Processing

PE IV - Professional Elective

S.No	Course Code	Course Title
1	2086753	Mobile Computing
2	2086754	Natural Language Processing
3	2086755	Semantic Web
4	2086756	Big Data Analytics

PE V - Professional Elective V

S.No	Course Code	Course Title
1	2086757	Artificial Neural Networks
2	2086758	Middleware Technologies
3	2086759	Virtual Reality
4	2086760	Block Chain Technology

PE VI - Professional Elective VI

S.No	Course Code	Course Title
1	2086761	Robotics
2	2086762	Cloud Computing
3	2086763	Web Services
4	2086764	Internet of Things

Open Electives

	Course Code	Course Title
1	Open Elective 1	2046706- Java Programming
		2036701- Database Management System
2	Open Elective 2	2066714- Data Analytics
		2056708-Machine Learning
3	Open Elective 3	2076717- Deep Learning
		2086718- R Programming