SIDDHARTHA INSTITUTE OF TECHNOLOGY & SCIENCES
(UGC – AUTONOMOUS)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A+' Grade
Narapally, Korremula Road, Ghatkesar, Medchal-Malkajgiri (Dist)-501 301

B.Tech – CSE (Data Science)

Course Structure (SITS - R22)
Applicable From 2022-23 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)	25.5
3	Engineering Sciences Courses including Workshop, Drawing basics of Electrical/Mechanical/Computer etc.(ES)	20.5
4	Professional Core Courses(PC)	58
5	Professional Electives(PE)	22
6	Open Electives(OE)	9
7	Project work, Seminar and Internship in Industry or elsewhere (PS)	18
8	Mandatory Courses	-
	TOTAL	**160**

B.Tech - CSE (Data Science)
Course Structure (SITS - R22)
Applicable From 2022-23 Admitted Batch

I YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2210001	Matrices and Calculus	BS	3	1	0	4	40	60	100
2	2210010	Engineering Chemistry	BS	3	1	0	4	40	60	100
3	2210503	Programming for Problem Solving	ES	3	0	0	3	40	60	100
4	2210201	Basic Electrical Engineering	ES	2	0	0	2	40	60	100
5	2210301	Computer Aided Engineering Graphics	ES	1	0	4	3	40	60	100
6	2210574	Elements of Computer Science & Engineering	PC	0	0	2	1	50	-	50
7	2210072	Engineering Chemistry Laboratory	BS	0	0	2	1	40	60	100
8	2210573	Programming for Problem Solving Laboratory	ES	0	0	2	1	40	60	100
9	2210271	Basic Electrical Engineering Laboratory	ES	0	0	2	1	40	60	100
		Induction Programme	-	-	-	-	-	-	-	-
		TOTAL		**12**	**2**	**12**	**20**	**370**	**480**	**850**

I YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2220002	Ordinary Differential Equations and Vector Calculus	BS	3	1	0	4	40	60	100
2	2220009	Applied Physics	BS	3	1	0	4	40	60	100
3	2220302	Engineering Workshop	ES	0	1	3	2.5	40	60	100
4	2220011	English for Skill Enhancement	HS	2	0	0	2	40	60	100
5	2220401	Electronic Devices and Circuits	ES	2	0	0	2	40	60	100
6	2210575	Python Programming Laboratory	ES	0	1	2	2	40	60	100
7	2220071	Applied Physics Laboratory	BS	0	0	3	1.5	40	60	100
8	2220073	English Language and Communication Skills Laboratory	HS	0	0	2	1	40	60	100
9	2210577	IT Workshop	ES	0	0	2	1	40	60	100
10	222MC01	Environmental Science	*MC	3	0	0	0	-	-	-
		TOTAL		**13**	**4**	**12**	**20**	**360**	**540**	**900**

*MC-Satisfactory/Unsatisfactory

II YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2230403	Fundamentals of Digital Electronics	ES	3	0	0	3	40	60	100
2	2230504	Data Structures	PC	3	0	0	3	40	60	100
3	2230007	Computer Oriented Statistical Methods	BS	3	1	0	4	40	60	100
4	2230505	Computer Organization and Architecture	PC	3	0	0	3	40	60	100
5	2230506	Object Oriented Programming through Java	PC	3	0	0	3	40	60	100
6	2230578	Data Structures Lab	PC	0	0	3	1.5	40	60	100
7	2230579	Object Oriented Programming through Java Lab	PC	0	0	3	1.5	40	60	100
8	2236771	Data visualization- R Programming/ Power BI	PC	0	0	2	1	40	60	100
9	223MC03	Gender Sensitization Lab	*MC	0	0	2	0	-	-	-
		TOTAL		**15**	**1**	**10**	**20**	**320**	**480**	**800**

II YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2240008	Discrete Mathematics	BS	3	0	0	3	40	60	100
2	2240012	Business Economics & Financial Analysis	HS	3	0	0	3	40	60	100
3	2240507	Operating Systems	PC	3	0	0	3	40	60	100
4	2240508	Database Management Systems	PC	3	0	0	3	40	60	100
5	2245601	Software Engineering	PC	3	0	0	3	40	60	100
6	2240580	Operating Systems Lab	PC	0	0	2	1	40	60	100
7	2240581	Database Management Systems Lab	PC	0	0	2	1	40	60	100
8	224PS01	Real-time Research Project/Societal Related Project	PS	0	0	4	2	50	-	50
9	2246772	Node JS/ React JS/Django	PC	0	0	2	1	40	60	100
10	224MC02	Constitution of India	*MC	3	0	0	0	-	-	-
		TOTAL		**18**	**0**	**10**	**20**	**370**	**480**	**850**

*MC-Satisfactory/Unsatisfactory

III YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	22505A1	Design and Analysis of Algorithms	PC	3	0	0	3	40	60	100
2	22567A1	Data Science	PC	3	1	0	4	40	60	100
3	2256201	Computer Networks	PC	3	0	0	3	40	60	100
4		Professional Elective-I	PE	3	0	0	3	40	60	100
5		Professional Elective-II	PE	3	0	0	3	40	60	100
6	2256773	R Programming Lab	PC	0	0	2	1	40	60	100
7	2256271	Computer Networks Lab	PC	0	0	2	1	40	60	100
8	2250074	Advanced English Communication Skills Lab	HS	0	0	2	1	40	60	100
9	2256774	ETL-Kafka/Talend	PC	0	0	2	1	40	60	100
10	225MC04	Intellectual Property Rights	*MC	3	0	0	0	-	-	-
		TOTAL		**18**	**1**	**08**	**20**	**360**	**540**	**900**

III YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2266601	Automata Theory and Compiler Design	PC	3	0	0	3	40	60	100
2	22666A1	Machine Learning	PC	3	0	0	3	40	60	100
3	2266726	Big Data Analytics	PC	3	0	0	3	40	60	100
4		Professional Elective–III	PE	3	0	0	3	40	60	100
5		Open Elective-I	OE	3	0	0	3	40	60	100
6	22666E1	Machine Learning Lab	PC	0	0	2	1	40	60	100
7	2266775	Introduction to Big Data Analytics Lab	PC	0	0	2	1	40	60	100
8		Professional Elective-III Lab	PE	0	0	2	1	40	60	100
9	226PS02	Industrial Oriented Mini Project/Summer Internship	PS	0	0	4	2	-	100	100
10	226MC01	Environmental Science	*MC	3	0	0	0	-	-	-
		TOTAL		**18**	**0**	**10**	**20**	**320**	**580**	**900**

*MC-Satisfactory/Unsatisfactory

**MC-Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2276727	Predictive Analytics	PC	3	0	0	3	40	60	100
2	2276728	Web and Social Media Analytics	PC	3	0	0	3	40	60	100
3		Professional Elective–IV	PE	3	0	0	3	40	60	100
4		Professional Elective–V	PE	3	0	0	3	40	60	100
5		Open Elective–II	OE	3	0	0	3	40	60	100
6	2276778	Web and social media Analytics Lab	PC	0	0	2	1	40	60	100
7	2276779	Predictive Analytics Lab	PC	0	0	2	1	40	60	100
8	227PS03	Project Stage–I	PS	0	0	6	3	100	-	100
		TOTAL		**15**	**0**	**10**	**20**	**380**	**420**	**800**

IV YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2280016	Organizational Behavior	PE	3	0	0	3	40	60	100
2		Professional Elective – VI	PE	3	0	0	3	40	60	100
3		Open Elective – III	OE	3	0	0	3	40	60	100
4	228PS04	Project Stage – II including Seminar	PS	0	0	22	11	40	60	100
		TOTAL		**9**	**0**	**22**	**20**	**160**	**240**	**400**

*MC-Satisfactory/Unsatisfactory

#Skill Course - 1 credit with 2 Practical Hours

Professional Elective (PE) Courses

PE-I: Professional Elective - I

S. No.	Course Code	Course Title
1	22567A3	Data Ware housing and Business Intelligence
2	22566A2	Artificial Intelligence
3	22505A3	Web Programming
4	22505A2	Image Processing
5	22505A4	Computer Graphics

PE-II: Professional Elective – II

S. No.	Course Code	Course Title
1	22567B2	Spatial and Multimedia Databases
2	22567A9	Information Retrieval Systems
3	22556A3	Software Project Management
4	22556A1	DevOps
5	22569A9	Computer Vision and Robotics

PE-III: Professional Elective – III

S. No.	Course Code	Course Title
1	22656A5	Software Testing Methodologies
2	22667B4	Data Visualization Techniques
3	22605A7	Scripting Languages
4	22662A4	Mobile Application Development
5	22662A1	Cryptography and Network Security

PE-III Lab: Professional Elective – III Lab

S. No.	Course Code	Course Title
1	22656E2	Software Testing Methodologies Lab
2	2266776	Data Visualization Techniques Lab
3	22605E1	Scripting Languages Lab
4	22662E2	Mobile Application Development Lab
5	22662E5	Cryptography and Network Security Lab

 # Courses in PE - III and PE - III Lab must be in 1-1 correspondence.

PE-IV: Professional Elective – IV

S. No.	Course Code	Course Title
1	22769A2	Quantum Computing
2	22762B2	Database Security
3	22766A4	Natural Language Processing
4	22767B5	Information Storage Management
5	22769A8	Internet of Things

PE-V: Professional Elective – V

S. No.	Course Code	Course Title
1	2276703	Privacy Preserving in Data Mining
2	22767A7	Cloud Computing
3	22767B7	Data Science Applications
4	22767B1	Mining Massive Datasets
5	22767B6	Exploratory Data Analysis

PE-VI: Professional Elective – VI

S. No.	Course Code	Course Title
1	22867B7	Data Stream Mining
2	22862B6	Web Security
3	2286729	Video Analytics
4	22862E4	Blockchain Technology
5	22805B5	Parallel and Distributed Computing

Open Elective (OE) Courses

S. No	Open Elective	Course Code	Course Title
1	Open Elective- I	22667G1	Fundamentals of Data Science
		22667G2	R Programming
2	Open Elective–II	22767G3	Data Mining
		22767A8	Data Analytics
3	Open Elective-III	22867G4	Introduction to social media mining
		22867G5	Data Visualization using Python

Note: Open Elective subject's syllabus is provided in a separate document. Student should take open electives from the list of offered by other departments/branches only.