



**SIDDHARTHA INSTITUTE OF TECHNOLOGY & SCIENCES**  
**(UGC – AUTONOMOUS)**

(Approved by AICTE, New Delhi & Affiliated to JNTUH Hyderabad)  
Narapally, Korremula Road, Ghatkesar, Medchal-Ranga Reddy (Dist)-500 088

**B.Tech – CSE (Artificial Intelligence & Machine Learning)**

**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)	9
2	Basic Sciences Courses(BS)	28.5
3	Engineering Sciences Courses including Workshop, Drawing basics of Electrical/Mechanical/Computer etc.(ES)	17.5
4	Professional Core Courses(PC)	59
5	Professional Electives(PE)	19
6	Open Electives(OE)	9
7	Project work, Seminar and Internship in Industry or elsewhere (PS)	18
8	Mandatory Courses	-
<b>TOTAL</b>		<b>160</b>

**B.Tech - CSE (Artificial Intelligence & Machine Learning)**

**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 (EIE)	Total
1	2210001	Matrices and Calculus	BS	3	1	0	4	40	60	100
2	2210009	Applied Physics	BS	3	1	0	4	40	60	100
3	2210503	Programming for Problem Solving	ES	3	0	0	3	40	60	100
4	2210302	Engineering Workshop	ES	0	1	3	2.5	40	60	100
5	2210011	English for Skill Enhancement	HS	2	0	0	2	40	60	100
6	2210574	Elements of Computer Science & Engineering	PC	0	0	2	1	50	-	50
7	2210071	Applied Physics Laboratory	BS	0	0	3	1.5	40	60	100
8	2210573	Programming for Problem Solving Laboratory	ES	0	0	2	1	40	60	100
9	2210073	English Language and Communication Skills Laboratory	HS	0	0	2	1	40	60	100
10	221MC01	Environmental Science	*MC	3	0	0	0	-	-	-
		Induction Programme	-	-	-	-	-	-	-	-
<b>TOTAL</b>				<b>14</b>	<b>3</b>	<b>12</b>	<b>20</b>	<b>370</b>	<b>480</b>	<b>850</b>

**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 (EIE)	Total
1	2220002	Ordinary Differential Equations and Vector Calculus	BS	3	1	0	4	40	60	100
2	2220010	Engineering Chemistry	BS	3	1	0	4	40	60	100
3	2220301	Computer Aided Engineering Graphics	ES	1	0	4	3	40	60	100
4	2220201	Basic Electrical Engineering	ES	2	0	0	2	40	60	100
5	2220401	Electronic Devices and Circuits	ES	2	0	0	2	40	60	100
6	2220575	Python Programming Laboratory	ES	0	1	2	2	40	60	100
7	2220072	Engineering Chemistry Laboratory	BS	0	0	2	1	40	60	100
8	2220271	Basic Electrical Engineering Laboratory	ES	0	0	2	1	40	60	100
9	2220577	IT Workshop	ES	0	0	2	1	40	60	100
<b>TOTAL</b>				<b>11</b>	<b>3</b>	<b>12</b>	<b>20</b>	<b>320</b>	<b>480</b>	<b>800</b>

**\*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 (EIE)	Total
1	2230005	Mathematical and Statistical Foundations	BS	3	1	0	4	40	60	100
2	2230504	Data Structures	PC	3	0	0	3	40	60	100
3	2230505	Computer Organization and Architecture	PC	3	0	0	3	40	60	100
4	2235601	Software Engineering	PC	3	0	0	3	40	60	100
5	2230507	Operating Systems	PC	3	0	0	3	40	60	100
6	2230578	Data Structures Lab	PC	0	0	2	1	40	60	100
7	2230580	Operating Systems Lab	PC	0	0	2	1	40	60	100
8	2235671	Software Engineering Lab	PC	0	0	2	1	40	60	100
9	2236772	Node JS/ React JS/ Django	PC	0	0	2	1	40	60	100
10	223MC02	Constitution of India	*MC	3	0	0	0	-	-	-
<b>TOTAL</b>				<b>18</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>320</b>	<b>480</b>	<b>800</b>

**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 (EIE)	Total
1	2240008	Discrete Mathematics	BS	3	0	0	3	40	60	100
2	2246601	Automata Theory and Compiler Design	PC	3	0	0	3	40	60	100
3	2240508	Database Management Systems	PC	3	0	0	3	40	60	100
4	2246626	Introduction to Artificial Intelligence	PC	3	0	0	3	40	60	100
5	2240506	Object Oriented Programming through Java	PC	3	0	0	3	40	60	100
6	2240581	Database Management Systems Lab	PC	0	0	2	1	40	60	100
7	2240582	Java Programming Lab	PC	0	0	2	1	40	60	100
8	224PS01	Real-time Research Project/Field-Based Research Project	PS	0	0	4	2	50	-	50
9	2246671	Prolog/ Lisp/ Pyswip	PC	0	0	2	1	40	60	100
10	224MC03	Gender Sensitization Lab	*MC	0	0	2	0	-	-	-
<b>TOTAL</b>				<b>15</b>	<b>0</b>	<b>12</b>	<b>20</b>	<b>370</b>	<b>480</b>	<b>850</b>

**\*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 (EIE)	Total
1	2250509	Design and Analysis of Algorithms	PC	3	1	0	4	40	60	100
2	22566A1	Machine Learning	PC	3	0	0	3	40	60	100
3	2256201	Computer Networks	PC	3	0	0	3	40	60	100
4	2250012	Business Economics & Financial Analysis	HS	3	0	0	3	40	60	100
5		Professional Elective-I	PE	3	0	0	3	40	60	100
6	22566E1	Machine Learning 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	2255672	UI design- Flutter	PC	0	0	2	1	40	60	100
10	225MC04	Intellectual Property Rights	*MC	3	0	0	0	-	-	-
<b>TOTAL</b>				<b>18</b>	<b>01</b>	<b>08</b>	<b>20</b>	<b>320</b>	<b>480</b>	<b>800</b>

**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 (EIE)	Total
1	2266627	Knowledge Representation and Reasoning	BS	3	0	0	3	40	60	100
2	22667A8	Data Analytics	PC	3	0	0	3	40	60	100
3	22666A4	Natural Language Processing	PC	3	0	0	3	40	60	100
4		Professional Elective – II	PE	3	0	0	3	40	60	100
5		Open Elective-I	OE	3	0	0	3	40	60	100
6	2266672	Natural Language Processing Lab	PC	0	0	3	1.5	40	60	100
7	22667E1	Principles of Data Analytics Lab	PC	0	0	3	1.5	40	60	100
8	226PS02	Industrial Oriented Mini Project/ Internship/Skill Development Course	PS	0	0	4	2	-	100	100
9	226MC01	Environmental Science	*MC	3	0	0	0	-	-	-
<b>TOTAL</b>				<b>18</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>320</b>	<b>580</b>	<b>900</b>

\*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 (EIE)	Total
1	2276601	Deep Learning	PC	3	0	0	3	40	60	100
2	2276602	Nature Inspired Computing	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 - II	OE	3	0	0	3	40	60	100
6	2270015	Professional Practice, Law & Ethics	HS	0	0	4	2	40	60	100
7		Professional Elective - III Lab	PE	0	0	2	1	40	60	100
8	227PS03	Project Stage - I	PS	0	0	6	3	100	-	100
<b>TOTAL</b>				<b>14</b>	<b>0</b>	<b>12</b>	<b>20</b>	<b>380</b>	<b>420</b>	<b>800</b>

**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 (EIE)	Total
1		Professional Elective – V	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
<b>TOTAL</b>				<b>9</b>	<b>0</b>	<b>22</b>	<b>20</b>	<b>160</b>	<b>240</b>	<b>400</b>

**\*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	22505A5	Graph Theory
2	22567A2	Introduction to Data Science
3	22505A3	Web Programming
4	22505A2	Image Processing
5	22505A7	Computer Graphics

**PE-II: Professional Elective – II**

S. No.	Course Code	Course Title
1	22656A5	Software Testing Methodologies
2	22667A9	Information Retrieval Systems
3	22667B3	Pattern Recognition
4	22669A9	Computer Vision and Robotics
5	22667A4	Data Warehousing and Business Intelligence

**PE-III: Professional Elective – III**

S. No.	Course Code	Course Title
1	22769A8	Internet of Things
2	2276707	Data Mining
3	22705A8	Scripting Languages
4	22762A4	Mobile Application Development
5	22767A7	Cloud Computing

# 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	22766A6	Expert Systems
3	22756A7	Semantic Web
4	22766A7	Game Theory
5	22762B3	Mobile Computing

**PE-V: Professional Elective – V**

S. No.	Course Code	Course Title
1	2286705	Social Network Analysis
2	22866A8	Federated Machine Learning
3	22866A9	Augmented Reality & Virtual Reality
4	22862B6	Web Security
5	22869A1	Ad-hoc & Sensor Networks

**PE-VI: Professional Elective – VI**

S. No.	Course Code	Course Title
1	22866B1	Speech and Video Processing
2	2286903	Robotic Process Automation
3	22805B4	Randomized Algorithms
4	22866B2	Cognitive Computing
5	22866B3	Conversational AI

**Open Elective (OE) Courses**

S. No	Open Elective	Course Code	Course Title
1	Open Elective- I	22666G1	Fundamentals of AI
		22666G2	Machine Learning Basics
2	Open Elective–II	22766G3	Introduction to Natural Language Processing
		22766G4	AI applications
3	Open Elective-III	22866G5	Chatbots
		22866G6	Genetic Algorithms & Fuzzy logic

**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.*