

**National Education Policy (NEP) Compliant Curriculum Structure for
B. Tech (Computer Engineering)
(With effect from Academic Year 2025-26)**



**Department of Computer Science and Engineering
Symbiosis Institute of Technology, Hyderabad.**

Constituent of Symbiosis International (Deemed University), Pune.

Established under Section 3 of the UGC Act of 1956 vide notification number F-9-12/2001-U-3 of the Government of India)
Re-Accredited by NAAC with 'A++' Grade

**Survey Number 292, Off Bangalore Highway, Modallaguda (V), Nandigama (M), Rangareddy
Dist, Hyderabad, Telangana, India, Pin Code: 509217**

Symbiosis Institute of Technology, Hyderabad
Bachelor of Technology (Computer Engineering)
Programme Structure 2025-29

1.	OBJECTIVE	<p>B. Tech (Computer Engineering) is a full-time four-year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities & liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values. Being a professional programme, it ensures a healthy balance between theoretical foundation and practical exposure to the present-day world.</p> <p>The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</p>				
2.	DURATION (IN MONTHS)	48 (Full Time)				
3.	INTAKE	30				
4.	RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)	
			15	7.5	3	
		II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)	
			2		20	
5.	ELIGIBILITY	<p>Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Computer Science/Electronics/ Information Technology/Biology/Informatics Practices/ Biotechnology/Technical Vocational subject/ Agriculture/ Engineering Graphics/Business Studies /Entrepreneurship. Obtained at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together. OR Passed D.Voc. Stream in the same or allied sector.(The University will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for students coming from diverse backgrounds to prepare Level playing field and desired learning outcomes of the programme). B.Tech. : Lateral Entry Passed Minimum Three-years/ Two-year (Lateral Entry) Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) in ANY branch of Engineering and Technology. OR Passed B.Sc. Degree from a recognized University as defined by UGC, with atleast 45% marks (40% marks or equivalent grade for Scheduled Caste / Scheduled Tribes) and passed 10+2 examination with Mathematics as a subject. OR Passed B. Voc/3-year D.Voc. Stream in the same allied sector. (The</p>				

		Constituent will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to achieve desired learning outcomes of the programme).		
6.	SELECTION PROCEDURE	Merit list by valid score of Symbiosis Entrance Test (SITEEE) or Joint Entrance Examination (JEE - Main) or Any State Government Engineering Entrance Examination.		
7.	MEDIUM OF INSTRUCTION	English		
8.	PROGRAMME PATTERN	Semester		
9.	COURSE & SPECIALIZATION	Annexure A: Bachelor of Technology (Computer Engineering)		
10.	FEE		Academic Fee p.a	Institute Deposit
				Total
	Indian Students (Amount in INR)		270000	20000
	International Students	NRI/ PIO/ OCI Category (Amount in US\$)		
		Foreign National Category (Amount in US\$)		
11.	ASSESSMENT	The courses will have 60% Continuous Assessment and 40% Term End [University] examination however, some courses (not more than 30% of the total programme credits) may have 100% Continuous Assessment.		
12.	STANDARD OF PASSING	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examinations separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.		
13.	AWARD OF DEGREE	Bachelor of Technology (Computer Engineering)		

14. CLASSIFICATION OF CREDITS

Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Mandatory Non-Credit Course/s	Non-Letter Grade Audit Course/s	Total
Common								
1	20	0	0	0	0	0	As per the student's choice	20
2	20	0	0	0	0	0		20
3	20	0	0	0	0	0		20
4	17	0	0	0	3	0		20
5	15	4	0	0	3	0		22
6	15	4	0	0	3	0		22
7(A)	14	8	0	0	0	0		22
7(B)	22	0	0	0	0	0		22
8	14	0	0	0	0	0		14
Total	135	16	0	0	9	0		160

Symbiosis Institute of Technology, Hyderabad
Bachelor of Technology (Computer Engineering)
Programme Structure 2025-29 Annexure A

Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Semester 1			20	500
Semester 2			20	500
Semester 3			20	500
Semester 4			20	500
Semester 5			22	550
Semester 6			22	550
Semester 7			22	550
Semester 8			14	350
Total			160	4000

Catalogue Course Code	Course Code	Course Title	Level	Nature	Specialization / Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total Marks
						L	T	Lab	Practical		Theory			
									CA	ESE	CA	ESE		
Semester :1														
Generic Core Courses														
		Calculus	1	BS		3	1	0	0	0	60	40	4	100
		Fundamentals of Quantum Physics	1	BS		3	0	2	15	10	45	30	4	100
		Digital Electronics and Logic Design	1	ES		2	0	2	15	10	30	20	3	75
		Programming Paradigm and Problem Solving	1	ES		2	0	2	15	10	30	20	3	75
		Software and Generative AI Tools	1	ES		0	0	2	15	10	0	0	1	25
		Tinker Lab	1	ES		0	0	4	50	0	0	0	2	50
		Critical Thinking	1	HS		1	0	0	0	0	25	0	1	25
		Indian Knowledge System	1	IKS		2	0	0	0	0	50	0	2	50
					Total	13	1	14	110	40	240	110	20	500
Semester : 2														
Generic Core Courses														
		Linear Algebra	2	BS		2	1	0	0	0	45	30	3	75
		Microcontrollers and Sensors	2	ES		2	0	2	15	10	30	20	3	75
		Computer Architecture and Organization	1	PC		2	0	2	15	10	30	20	3	75
		Software Engineering	1	PC		2	0	2	15	10	30	20	3	75
		Python Programming	1	PC		2	0	2	15	10	30	20	3	75
		Cyber Security	1	ES		1	0	2	25	0	25	0	2	50
		Introduction to Environment and Sustainability	1	ES		0	0	2	25	0	0	0	1	25
		Technical Communication Skills	1	HS		0	0	2	25	0	0	0	1	25
		Creative Thinking	1	HS		0	0	2	25	0	0	0	1	25
		Health and Wellness - Module I				0	0	0	0	0	0	0	MC	Non

														Graded Course
		Career Essential - I*				0	0	0	0	0	0	0	MC	Non Graded Course
					Total	11	1	16	160	40	190	110	20	500
Semester :3														
Generic Core Courses														
		Discrete Mathematics	2	BS	CSE and IT	2	1	0	0	0	45	30	3	75
		Data Structures	2	PC	CSE and IT	2	0	4	30	20	30	20	4	100
		Operating Systems	2	PC	CSE and IT	3	0	2	15	10	45	30	4	100
		Database Management Systems	2	PC	CSE and IT	2	0	4	30	20	30	20	4	100
		Programming with JAVA	2	PC		0	0	4	30	20	0	0	2	50
		Flexi Course	2	PC		0	0	4	50	0	0	0	2	50
		Web Application Development	2	PC	CSE and IT	0	0	2	15	10	0	0	1	25
		Health and Wellness - Module-II *			Others	0	0	0	0	0	0	0	MC	Non Graded Course
		Career Essential - II*				0	0	0	0	0	0	0	MC	Non Graded Course
					Total	9	1	20	170	80	150	100	20	500
Semester:4														
Generic Core Courses														
		Statistics and Probability	2	BS	Applied Sciences	2	1	0	0	0	45	30	3	75
		Computer Networks	4	PC	CSE and IT	2	0	2	15	10	30	20	3	75
		Mobile Application Development			CSE and IT	2	0	2	15	10	30	20	3	75
		Mobile Application Development Lab			CSE and IT	0	0	2	15	10	0	0	1	25
		Data Management and Visualization	2	PC	CSE and IT	2	0	2	15	10	30	20	3	75
		Design Thinking	2	HS	CSE and IT	0	0	2	25	0	0	0	1	25
		Project Based Learning-I	2	PIS	CSE and IT	0	0	4	50	0	0	0	2	50

		Advanced Python Lab	3	PC	Robotics and Automation	0	0	2	15	10	0	0	1	25
		Career Essential-III*	2			0	0	0	0	0	0	0	MC	Non Graded Course
					Total	8	1	16	150	50	135	90	17	425
Open Elective Courses Group - I (Choose Any One Course)														
		Quantum Computing for Engineers	2	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		Mathematics for Data Science	2	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		Fundamentals of Machine Learning	2	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	45	30	3	75
		AI System development	2	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	45	30	3	75
		Smart Cities planning and management	2	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Intelligent Waste Management Techniques	2	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Web Technologies	2	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Data Science	2	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Engineering Simulation and Modelling Tools	2	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75
		Medical Electronics	2	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75

		3D Printing and Prototyping	2	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75
		Battery Management Systems	2	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75
		Fundamentals of Robotics and Automation	2	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
		Robot Process Automation	2	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
Semester :5														
Generic Core Courses														
		Basics of Internet of Things and Raspberry Pi		PC		2	0	2	15	10	30	20	3	75
		Cryptography and Information Security	3	PC		2	0	2	15	10	30	20	3	75
		Data Science and Business Intelligence	3	PC		2	0	2	15	10	30	20	3	75
		Introduction to Cloud Computing	2	PC		2	0	2	15	10	30	20	3	75
		Service Learning		HS		0	0	4	50	0	0	0	2	50
		Entrepreneurship Venture		HS		1	0	0	0	0	25	0	1	25
		Vasudhaiva Kutumbakam				0	0	0	0	0	0	0	MC	Non Graded Course
		Career Essential-IV*				0	0	0	0	0	0	0	MC	Non Graded Course
					Total	9	0	12	110	40	145	80	15	375
Generic Elective Courses Group - I (Choose Any One Course)														
		Cloud Computing Tools and Techniques	3	PE		3	0	2	25	0	75	0	4	100
		Advanced Computer Networks	3	PE		3	0	2	25	0	75	0	4	100
		Advances in Machine Learning	3	PE		3	0	2	25	0	75	0	4	100
		Data Warehousing and Mining	3	PE		3	0	2	25	0	75	0	4	100
		Essentials of Augmented and Virtual Reality	3	PE		3	0	2	25	0	75	0	4	100

		IoT Data Analytics	3	PE		3	0	2	25	0	75	0	4	100
					Total				25	0	75	0	4	100
Open Elective Courses Group - II (Choose Any One Course)														
		Financial Mathematics	3	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		Advanced Materials	3	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		Optimization for ML Systems	3	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	45	30	3	75
		Deep Learning Essentials	3	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	45	30	3	75
		Sustainability Engineering-Design and Innovation	3	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Occupational Health and Safety Management	3	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Introduction to Cloud Computing	3	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Agile Methodologies	3	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Embedded System & IoT	3	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75
		Introduction to 5G Technology	3	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75
		Electric and Hybrid Vehicles	3	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75
		Six Sigma	3	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75

		Industrial Robotics	3	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
		PLC and SCADA	3	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
Semester : 6														
Generic Core Courses														
		Compiler Design	4	PC		2	0	2	15	10	30	20	3	75
		Design and Analysis of Algorithms	4	PC		2	0	2	15	10	30	20	3	75
		Blockchain Technology	4	PC		2	0	2	15	10	30	20	3	75
		Flexi Course	4	PC		2	0	1	25	0	50	0	3	75
		Organizational Behaviour		HS		1	0	0	0	0	25	0	1	25
		Project Based Learning-II	4	PIS		0	0	4	50	0	0	0	2	50
		Career Essential-V*	4			0	0	0	0	0	0	0	MC	Non Graded Course
					Total	9	0	11	120	30	165	60	15	375
Generic Elective Courses Group - II (Choose Any One Course)														
		DevOps	4	PE		3	0	2	25	0	75	0	4	100
		Malware Analysis and Secure Coding	4	PE		3	0	2	25	0	75	0	4	100
		Computer Vision Applications	4	PE		3	0	2	25	0	75	0	4	100
		Pattern Recognition	4	PE		3	0	2	25	0	75	0	4	100
		Advance Databases	4	PE		3	0	2	25	0	75	0	4	100
		AR and VR Applications	4	PE		3	0	2	25	0	75	0	4	100
		IoT Security	4	PE		3	0	2	25	0	75	0	4	100
					Total				25	0	75	0	4	100
Open Elective Courses Group - III (Choose Any One Course)														
		Bioinformatics	4	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		Space Science	4	MOPE	Applied Science	2	1	0	0	0	45	30	3	75
		GenAI Tools and Techniques	4	MOPE	Artificial Intelligence and Machine	2	1	0	0	0	45	30	3	75

					Learning									
		Data Engineering	4	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	45	30	3	75
		GIS and Remote Sensing Analytics	4	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Environmental Impact Assessment	4	MOPE	Civil	2	1	0	0	0	45	30	3	75
		Software Testing and Quality Assurance	4	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Introduction to AR-VR	4	MOPE	Computer Science and Engineering	2	1	0	0	0	45	30	3	75
		Renewable Energy Systems	4	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75
		Semiconductor Technology Trends	4	MOPE	Electronics & Tele-communication Engineering	2	1	0	0	0	45	30	3	75
		Supply Chain Management	4	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75
		Smart Manufacturing and Introduction of Industry 5.0	4	MOPE	Mechanical Engineering	2	1	0	0	0	45	30	3	75
		Mobile Robotics	4	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
		Introduction to Aerial Robotics and Drone Technology	4	MOPE	Robotics and Automation	2	1	0	0	0	45	30	3	75
					Total				0	0	45	30	3	75
Semester : 7 (Plan A)														
Students will register for Scheme-A(Regular semester pattern)/ Scheme B (Internship/Entrepreneurship full time/GIP)/B Tech(Research)														
Generic Core Courses														
		Big Data Analytics	4	PC		2	0	2	15	10	30	20	3	75
		Project Management and	4	PC		2	0	0	0	0	30	20	2	50

		Practices												
		Flexi Course	4	PC		2	0	2	50	0	25	0	3	75
		B.Tech Project	4	PIS		0	0	8	60	40	0	0	4	100
		Flexi Course (MOOC)	4	PE		0	0	0	0	0	50	0	2	50
					Total	6	0	12	125	50	135	40	14	350
Generic Elective Courses Group - III (Choose Any One Course)														
		Cloud Security and Privacy	4	PE		3	0	2	25	0	75	0	4	100
		IoT in Smart Cities	4	PE		3	0	2	25	0	75	0	4	100
		Business and Finance Analytics	4	PE		3	0	2	25	0	75	0	4	100
		Building and Training Large Language Models	4	PE		3	0	2	25	0	75	0	4	100
		Human Computer Interface	4	PE		3	0	2	25	0	75	0	4	100
		Distributed Databases	4	PE		3	0	2	25	0	75	0	4	100
					Total				25	0	75	0	4	100
Generic Elective Courses Group - IV (Choose Any One Course)														
		High Performance Computing	4	PE		3	0	2	25	0	75	0	4	100
		Digital Forensics	4	PE		3	0	2	25	0	75	0	4	100
		Soft Computing	4	PE		3	0	2	25	0	75	0	4	100
		Information Storage & Retrieval	4	PE		3	0	2	25	0	75	0	4	100
		Robotics and AI	4	PE		3	0	2	25	0	75	0	4	100
		IT Infrastructure and Automation	4	PE		3	0	2	25	0	75	0	4	100
					Total				25	0	75	0	4	100
Semester : 7 (Plan B)														
Students will register for Scheme-A(Regular semester pattern)/ Scheme B (Internship/Entrepreneurship full time/GIP)/B Tech (Research)														
Generic Core Courses														
		B. Tech Project		PIS		0	0	8	60	40	0	0	4	100
		Internship-I		PIS		0	0	20	250	0	0	0	10	250
		Seminar -I		PIS		0	0	10	75	50	0	0	5	125
		Flexi Course (MOOC)		PC		0	0	6	75	0	0	0	3	75
				Total		0	0	44	460	90	0	0	22	550
Semester : 8														

Generic Core Courses														
		Internship		PIS		0	0	24	180	120	0	0	12	300
		Seminar		PIS		0	0	4	30	20	0	0	2	50
				Total		0	0	28	210	140	0	0	14	350