



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

1. OBJECTIVE	<p>B.Tech 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.</p> <p>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	180				
4. RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)	d) Domicile of Nagpur (In Percentage)
		15	7.5	3	25 (Includes i. Scheduled Caste (percentage) - 15 ii. Scheduled Tribes (percentage) - 7.5 iii. Differently Abled (percentage) - 3)
	II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)	
		2		15	
5. ELIGIBILITY	Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/				





Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

		<p>Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.</p> <p>B. Tech (Lateral entry to second year) :</p> <p>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.</p> <p>b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) and passed XII standard with mathematics as a subject.</p> <p>c) Provided that in case of students belonging to B. Sc. Stream, shall clear the subjects of Engineering Graphics / Engineering Drawing and Engineering Mechanics of the first year Engineering program along with the second year subjects.</p> <p>d) Provided further that, the students belonging to B. Sc. Stream shall be considered only after filling the supernumerary seats in this category with students belonging to the Diploma stream.</p> <p>e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc. Degree from a recognized University as defined by UGC, shall also be eligible for admission to the first year Engineering Degree courses subject to vacancies in the first year class in case the vacancies at lateral entry are exhausted. However the admissions shall be based strictly on the eligibility criteria as mentioned in a, b, c, and d above.</p>
6.	SELECTION PROCEDURE	Merit list by valid score of Joint Entrance Examination (JEE - Main) or Any State Government Engineering Entrance Examination.
7.	MEDIUM OF INSTRUCTION	English
8.	PROGRAMME PATTERN	Semester
9.	COURSE & SPECIALIZATION	<p>Annexure A: Bachelor of Technology (Computer Science and Engineering)</p> <p>Students may pursue optional 'Honours' specialization in one of the specialization areas by completing additional 20 credits in Semester: 5, 6 and 7 as specified in Annexure B for Honours.</p> <p>Annexure B: Optional 'Honours' specialization area</p> <ol style="list-style-type: none"> 1. Artificial Intelligence and Machine learning 2. Computing





Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

		3. Data Science 4. Game Design and Development 5. Security and Privacy 6. Internet of Things			
10.	FEE		Academic Fee p.a	Institute Deposit	Total
	Indian Students	Other than Nagpur Domicile	260000	20000	280000
		Nagpur Domicile	221000	20000	241000
	International Students	NRI/ PIO/ OCI Category (Amount in US\$)	5100	275	5375
		Foreign National Category (Amount in US\$)	1300	275	1575
Note: For additional optional specialization 'Honours', an additional fees of Rs. 25000/- will be charged in the third year.					
11.	ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
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 examination 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 Science Engineering)			



		<p>OR</p> <p>Bachelor of Technology (Computer Science Engineering) with Honours in Artificial Intelligence and Machine learning / Computing / Data Science / Game Design and Development / Security and Privacy /Internet of Things, will be awarded at the end of semester 8 examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA</p>
--	--	--

14. CLASSIFICATION OF CREDITS								
Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Non-Letter Grade Mandatory Course/s	Non-Letter Grade Audit Course/s	Total
Group A								
1	20	0	0	0	0	1	As per the student's choice	20
2	19	0	0	0	0	1		19
3	23	1	0	0	0	0		24
4	18	2	0	0	0	1		20
5	21	0	0	0	3	0		24
6	12	10	0	0	3	0		25
7	13	11	0	0	0	0		24
8	14	0	0	0	0	0		14
Total	140	24	0	0	6	0		170
Group B								
1	19	0	0	0	0	1	As per the student's choice	19
2	20	0	0	0	0	1		20
3	23	1	0	0	0	0		24
4	18	2	0	0	0	1		20
5	21	0	0	0	3	0		24
6	12	10	0	0	3	0		25
7	13	11	0	0	0	0		24
8	14	0	0	0	0	0		14
Total	140	24	0	0	6	0		170
Optional Additional Courses (Honours)								
Total	0	0	20	0	0	0	20	

Note: For additional specializations (optional) as applicable, fees of Rs.25000/- will be charged, additionally in the third year

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council and Board of Management. Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Director - Academics

THIS IS SYSTEM GENERATED DOCUMENT AND REQUIRES NO SIGNATURE.



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 1													
Group A - Generic Core Courses													
TE7680	0705210101	Mathematics-I	BS		2	1	0	0	0	30	45	3	75
TE7684	0705210102	Physics for Computer Engineers	BS		3	0	0	0	0	30	45	3	75
TE7687	0705210103	Physics Lab	BS		0	0	2	10	15	0	0	1	25
T7383	0705210104	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0705210105	Communication Skills Lab	HS		0	0	2	10	15	0	0	1	25
TE7288	0705210106	Programming in C	PC		3	0	0	0	0	30	45	3	75
TE7289	0705210107	Programming in C Lab	PC		0	0	2	10	15	0	0	1	25
TE7689	0705210108	Statistics and Probability	BS		2	1	0	0	0	30	45	3	75
T6873	0705210109	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
TE7300	0705210110	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
TE7188	0705210111	Environmental Science	0		0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
Total Required Credits								80	45	165	210	20	500
Group B - Generic Core Courses													
TE7680	0705210101	Mathematics-I	BS		2	1	0	0	0	30	45	3	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7288	0705210106	Programming in C	PC		3	0	0	0	0	30	45	3	75
TE7289	0705210107	Programming in C Lab	PC		0	0	2	10	15	0	0	1	25
TE7188	0705210111	Environmental Science	0		0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
TE7694	0705210112	Chemistry	BS		3	0	0	0	0	30	45	3	75
TE7695	0705210113	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0705210114	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0705210115	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
TE7749	0705210116	Software Tools for Computer Science	ES		0	0	2	25	0	0	0	1	25
T6732	0705210117	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
T7925	0705210118	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
Total Required Credits								75	75	145	180	19	475
Semester : 2													
Group - A Generic Core Courses													
TE7681	0705210201	Mathematics-II	BS		3	1	0	0	0	40	60	4	100
TE7694	0705210202	Chemistry	BS		3	0	0	0	0	30	45	3	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7695	0705210203	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0705210204	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0705210205	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
TE7286	0705210206	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0705210207	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25
T7925	0705210208	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
T6732	0705210209	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
TE7749	0705210210	Software Tools for Computer Science	ES		0	0	2	25	0	0	0	1	25
TH4095	0705210211	Fitness for Life	0		0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
Total Required Credits								75	75	145	180	19	475
Group - B Generic Core Courses													
TE7681	0705210201	Mathematics-II	BS		3	1	0	0	0	40	60	4	100
TE7286	0705210206	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0705210207	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Celebrating 50 Years of Excellence

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total	
					L	T	La b	Practical		Theory				
								CA	ESE	CA	ESE			
TH4095	0705210211	Fitness for Life	0		0	0	0	0	0	0	0	0	0	Non - Letter Grade Mandatory
TE7684	0705210212	Physics for Computer Engineers	BS		3	0	0	0	0	30	45	3	75	
TE7687	0705210213	Physics Lab	BS		0	0	2	10	15	0	0	1	25	
TE7689	0705210214	Statistics and Probability	BS		2	1	0	0	0	30	45	3	75	
T7383	0705210215	Communication Skills	HS		2	0	0	0	0	20	30	2	50	
T7384	0705210216	Communication Skills Lab	HS		0	0	2	10	15	0	0	1	25	
TE7300	0705210217	Tinker Lab	ES		0	0	4	50	0	0	0	2	50	
T6873	0705210218	Creative Thinking	HS		1	0	0	0	0	25	0	1	25	
Total Required Credits								80	45	165	210	20	500	
Semester : 3														
Generic Core Courses														
TE7675	0705210301	Discrete Mathematics and Graph Theory	BS		3	1	0	0	0	40	60	4	100	
T7996	0705210302	Computer Organization	PC		3	0	0	0	0	30	45	3	75	
TE7960	0705210303	Data Structures	PC		3	0	0	0	0	30	45	3	75	
TE7959	0705210304	Data Structures Lab	PC		0	0	2	10	15	0	0	1	25	
T7512	0705210305	Programming Paradigms	PC		3	0	0	0	0	30	45	3	75	



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Celebrating 50 Years of Excellence

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7513	0705210306	Programming Paradigms Lab	PC		0	0	2	10	15	0	0	1	25
TE7745	0705210307	Sensors and Microcontrollers	ES		3	0	0	0	0	30	45	3	75
TE7746	0705210308	Sensors and Microcontrollers Lab	ES		0	0	2	10	15	0	0	1	25
T2646	0705210309	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
F0003	0705210310	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
Total					19	1	6	30	45	260	240	23	575
Generic Elective Courses Group (Choose Any One Course)													
T6872	0705210311	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
T6760	0705210312	Introduction to Indian Philosophy	GE		1	0	0	0	0	25	0	1	25
Total Required Credits								0	0	25	0	1	25
Semester : 4													
Generic Core Courses													
TE7678	0705210401	Mathematical Transform Techniques	BS		2	1	0	0	0	30	45	3	75
F0004	0705210402	Flexi-Credit Course	PC		4	0	0	0	0	100	0	4	100
T7907	0705210403	Database Management Systems	PC		3	0	0	0	0	30	45	3	75
T7487	0705210404	Data Base Management Systems Lab	PC		0	0	2	20	30	0	0	2	50
T7510	0705210405	Operating Systems	PC		3	0	0	0	0	30	45	3	75
T7511	0705210406	Operating Systems Lab	PC		0	0	2	10	15	0	0	1	25



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7290	0705210407	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
T4005	0705210408	Integrated Disaster Management	0		0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
Total					12	1	8	80	45	190	135	18	450
Generic Elective Courses Group (Choose Any One Course)													
T6186	0705210409	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6184	0705210410	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6188	0705210411	Basic Spanish I	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								0	0	50	0	2	50
Semester : 5													
Generic Core Courses													
F0004	0705210501	Flexi-Credit Course	PC		4	0	0	0	0	100	0	4	100
T8000	0705210502	Service Learning	HS		0	0	8	100	0	0	0	4	100
T7908	0705210503	Computer Networks	PC		3	0	0	0	0	30	45	3	75
T7482	0705210504	Computer Networks Lab	PC		0	0	2	10	15	0	0	1	25
T7909	0705210505	Design and Analysis of Algorithms	PC		3	0	0	0	0	30	45	3	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7491	0705210506	Design and Analysis of Algorithms Lab	PC		0	0	2	10	15	0	0	1	25
TE7299	0705210507	Theory of Computation	PC		3	0	0	0	0	30	45	3	75
T6774	0705210508	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
Total					15	0	12	120	30	240	135	21	525
Open Elective Courses Group (Choose Any One Course)													
TE7952	0705210509	User Interface and Experience Design	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7499	0705210510	Java	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7428	0705210511	Introduction to Image Processing	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TEE7018	0705210512	Engineering Simulation and Modeling Tools	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7810	0705210513	Industrial Revolution and Introduction of Industry 5.0	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0705210514	Six sigma	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Semester : 6													



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Generic Core Courses													
TE7008	0705210601	Distributed Systems and Resource Management	PC		3	0	0	0	0	30	45	3	75
F0003	0705210602	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
T6749	0705210603	Design Thinking	HS		2	0	0	0	0	50	0	2	50
TE7291	0705210604	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
T7802	0705210605	Capstone Course	PC		2	0	0	0	0	50	0	2	50
Total					10	0	4	50	0	205	45	12	300
Generic Elective Courses Group- I (Choose Any One Course)													
TE7255	0705210606	Data Warehousing and Mining	PE		3	0	0	0	0	30	45	3	75
TE7101	0705210607	Internet of Things	PE		3	0	0	0	0	30	45	3	75
TE7916	0705210608	Cloud Computing Tools and Techniques	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - II (Choose Any One Course)													
TE7013	0705210609	Data Warehousing and Mining Lab	PE		0	0	2	10	15	0	0	1	25
T7528	0705210610	Internet of Things Lab	PE		0	0	2	10	15	0	0	1	25
TE7949	0705210611	Cloud Computing Tools and Techniques Lab	PE		0	0	2	10	15	0	0	1	25



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
Total Required Credits								10	15	0	0	1	25
Generic Elective Courses Group- III (Choose Any One Course)													
T7473	0705210612	Artificial Intelligence	PE		3	0	0	0	0	30	45	3	75
TE7328	0705210613	Image Processing	PE		3	0	0	0	0	30	45	3	75
TE7953	0705210614	Information and Network Security	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - IV (Choose Any One Course)													
TE7014	0705210615	Artificial Intelligence Lab	PE		0	0	2	10	15	0	0	1	25
TE7329	0705210616	Image Processing Lab	PE		0	0	2	10	15	0	0	1	25
TE7947	0705210617	Information and Network Security Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Generic Elective Courses Group - V (Choose Any One Course)													
T2585	0705210618	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
TE7438	0705210619	History of Science and Technology	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								0	0	50	0	2	50



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Open Elective Courses Group (Choose Any One Course)													
TE7297	0705210620	Software Testing Tools	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0705210621	Open Source Technologies	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7584	0705210622	Printed Circuit Board (PCB) Design	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0705210623	Introduction to Mechatronics	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7804	0705210624	Design Optimization Techniques	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7351	0705210625	3D Printing and Prototyping	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Semester : 7													
Generic Core Courses													
T7804	0705210701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
TE7751	0705210702	Compiler Construction	PC		3	0	0	0	0	30	45	3	75
T7478	0705210703	Compiler Construction Lab	PC		0	0	2	10	15	0	0	1	25
F0003	0705210704	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7674	0705210705	Cyber Security	PC		2	0	0	0	0	20	30	2	50
Total					8	0	10	50	75	125	75	13	325
Generic Elective Courses Group - I (Choose Any One Course)													
TE7253	0705210706	Data Science	PE		3	0	0	0	0	30	45	3	75
TE7282	0705210707	Optimization Techniques and Algorithms	PE		3	0	0	0	0	30	45	3	75
TE7552	0705210708	Big Data Analytics	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - II (Choose Any One Course)													
TE7254	0705210709	Data Science Lab	PE		0	0	2	10	15	0	0	1	25
TE7283	0705210710	Optimization Techniques and Algorithms Lab	PE		0	0	2	10	15	0	0	1	25
TE7554	0705210711	Big Data Analytics Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Generic Elective Courses Group- III (Choose Any One Course)													
TE7955	0705210712	Introduction to AR/VR	PE		3	0	0	0	0	30	45	3	75
TE7259	0705210713	Human Computer Interface	PE		3	0	0	0	0	30	45	3	75
TE7954	0705210714	Introduction to Information Retrieval	PE		3	0	0	0	0	30	45	3	75



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - IV (Choose Any One Group)													
Generic Elective Courses													
T7529	0705210715	Machine Learning	PE		3	0	0	0	0	30	45	3	75
TE7105	0705210716	Machine Learning Lab	PE		0	0	2	10	15	0	0	1	25
Generic Elective Courses													
TE7103	0705210717	Natural Language Processing	PE		3	0	0	0	0	30	45	3	75
TE7106	0705210718	Natural Language Processing Lab	PE		0	0	2	10	15	0	0	1	25
Generic Elective Courses													
TE7951	0705210719	DevOps	PE		2	0	0	0	0	20	30	2	50
TE7950	0705210720	DevOps Lab	PE		0	0	4	20	30	0	0	2	50
Total Required Credits								20	30	20	30	4	100
Semester : 8													
Generic Core Courses													
T7912	0705210801	Internship	PIS		0	0	24	120	180	0	0	12	300
T7802	0705210802	Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	28	140	210	0	0	14	350



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure A

Abbreviations (Nature)

BS	Basic Sciences
ES	Engineering Sciences
HS	Humanities and Social Sciences
OE	Open Electives
PC	Professional Core
PE	Professional Elective
PIS	Project, Internship, Seminar
PD	Professional Development Course
MC	Mandatory Course
L	Lecture
T	Tutorial
CA	Continuous Assessment
ESE	End Semester Examination
GE	Generic Elective



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27
Annexure A

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Group A				
Semester 1	3	17	20	500
Semester 2	2	17	19	475
Semester 3	5	19	24	600
Semester 4	8	12	20	500
Semester 5	10	14	24	600
Semester 6	11	14	25	625
Semester 7	3	21	24	600
Semester 8	0	14	14	350
Total	42	128	170	4250
Group B				
Semester 1	2	17	19	475
Semester 2	3	17	20	500
Semester 3	5	19	24	600
Semester 4	8	12	20	500
Semester 5	10	14	24	600
Semester 6	11	14	25	625
Semester 7	3	21	24	600
Semester 8	0	14	14	350
Total	42	128	170	4250

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27



Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 5													
Artificial Intelligence and Machine Learning Specialization Core Courses													
TE7273	0705210515	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0705210516	Machine Learning: Regression	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 5													
Computing Specialization Core Courses													
TE7248	0705210517	Cloud Computing	PC		3	0	0	0	0	30	45	3	75
TE7250	0705210518	Cloud Environment in Public Model	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 5													
Data Science Specialization Core Courses													
TE7281	0705210519	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0705210520	R Programming	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 5													
Game Design and Development Specialization Core Courses													
TE7267	0705210521	Introduction to Game Development	PC		3	0	0	0	0	30	45	3	75
TE7285	0705210522	Principles of Game Design	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 5													
Internet of Things Specialization Core Courses													
TE7268	0705210523	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0705210524	Raspberry Pi and Python	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 5													
Security and Privacy Specialization Core Courses													
TE7296	0705210525	Software Security	PC		3	0	0	0	0	30	45	3	75
TE7301	0705210526	Usable Security	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27



Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 6													
Artificial Intelligence and Machine Learning Specialization Core Courses													
TE7266	0705210626	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
TE7271	0705210627	Machine Learning Clustering and Retrieval	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 6													
Computing Specialization Core Courses													
TE7246	0705210628	Block Chain	PC		4	0	0	0	0	40	60	4	100
TE7249	0705210629	Cloud Computing Platforms	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 6													
Data Science Specialization Core Courses													
TE7247	0705210630	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0705210631	Power BI	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
Semester : 6													
Game Design and Development Specialization Core Courses													
TE7275	0705210632	Modern Platforms in Game Development	PC		4	0	0	0	0	40	60	4	100
TE7256	0705210633	Entrepreneurship in Game Development	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 6													
Internet of Things Specialization Core Courses													
TE7269	0705210634	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0705210635	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 6													
Security and Privacy Specialization Core Courses													
TE7252	0705210636	Cryptography	PC		4	0	0	0	0	40	60	4	100
TE7258	0705210637	Hardware Security	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 7													
Artificial Intelligence and Machine Learning Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Computing Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Data Science Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175



Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 7													
Game Design and Development Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Internet of Things Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Security and Privacy Specialization Core Courses													
T7805	0705210721	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0705210722	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Artificial Intelligence and Machine Learning				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Computing				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Data Science				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Game Design and Development				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Internet of Things				
Semester 5	0	7	7	175
Semester 6	0	6	6	150



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2023-27

Annexure B
Optional 'Honours' Specialization

Semester 7	0	7	7	175
Total	0	20	20	500
Security and Privacy				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500