

**SYMBIOSIS INSTITUTE OF TECHNOLOGY**  
**BACHELOR OF TECHNOLOGY (COMPUTER SCIENCE & ENGINEERING)**  
**PROGRAMME STRUCTURE 2017-21**

**1. OBJECTIVE**

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.

Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.

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.

**2. DURATION**

Four Years Full Time

**3. INTAKE**

60 Students

**4. RESERVATION**

I. Within the sanctioned intake:

- a) Scheduled Castes – 15%
- b) Scheduled Tribes – 7.5%
- c) Differently Able - 3%

II. Over and above the sanctioned intake:

- a) Kashmiri Migrants - 2 Seats
- b) International Students – 15%

**5. ELIGIBILITY**

- a) Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks (40% in case of candidate belonging to reserved category) in the above subjects taken together.
- b) B. Tech (Lateral entry to second year) :
- c) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks (40% in case of candidates belonging to reserved category) in appropriate branch of Engineering / Technology.
- d) Passed B.Sc. Degree from a recognized University as

defined by UGC, with at least 45% marks (40% in case of candidates belonging to reserved category) and passed XII standard with mathematics as a subject.

- e) 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.
- f) 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.
- g) 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.

A candidate who has completed qualifying qualification from any Foreign Board / University must obtain an equivalence certificate from Association of Indian Universities (AIU).

## 6. SELECTION PROCEDURE

Merit list by valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Maharashtra Common Entrance Test ( MHT-CET)

## 7. MEDIUM OF INSTRUCTION

English

## 8. PROGRAMME PATTERN

Semester Pattern - 8 Semesters

## 9. COURSES & SPECIALIZATION

As per Annexure A

## 10. FEE

### Indian Students

Academic Fee p.a. Rs. 2,25,000

Institute Deposit Rs. 10,000

**Total Rs. 2,35,000**

### International Students

Academic Fee p.a. Rs. 3,40,000

Institute Deposit Rs. 10,000

**Total Rs. 3, 50, 000**

**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)** will be awarded at the end of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

Structure is approved by the Council subject to its norms & conditions. Any provision in the Programme structure which violates the basic rules & regulations is deemed to be termed "Null & Void".  
Head - Academics

**Annexure A  
Semester I**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Practical		Examination Scheme Marks		Total Credits	Total Marks
				L	T	Lab	CA	ESE	CA	ESE		
T7385	070122101	Engineering Mathematics I	BS	4	2	-	-	-	50	75	5	125
T7381	070122102	Chemistry	BS	3	-	-	-	-	30	45	3	75
T7382	070122103	Chemistry Lab	BS	-	-	2	10	15	-	-	1	25
T7540	070122104	Basic Electrical and Electronics Engineering	ES	3	-	-	-	-	30	45	3	75
T7593	070122105	Basic Electrical and Electronics Engineering Lab	ES	-	-	2	10	15	-	-	1	25
T7414	070122106	Engineering Mechanics	ES	3	-	-	-	-	30	45	3	75
T7415	070122107	Engineering Mechanics Lab	ES	-	-	2	10	15	-	-	1	25
T7924	070122108	Engineering Graphics	ES	2	-	-	-	-	20	30	2	50
T7925	070122109	Engineering Graphics Lab	ES	-	-	4	20	30	-	-	2	50
T7943	070122110	Technical English & Communication Skill	MC	2	-	-	-	-	50	-	2	50
T7944	070122111	Technical English & Communication Skill Lab	MC	-	-	2	10	15	-	-	1	25
<b>Inter Institute Course I (Choose any one course from the following)</b>												
T7945	070122112	Law for Engineers	OE	2	-	-	-	-	50	-	2	50
T7946	070122113	Economics for Engineers	OE	2	-	-	-	-	50	-	2	50
T4609	070122114	My Nutrition Guide	OE	2	-	-	-	-	50	-	2	50
<b>Total</b>				<b>19</b>	<b>2</b>	<b>12</b>	<b>60</b>	<b>90</b>	<b>260</b>	<b>240</b>	<b>26</b>	<b>650</b>

**Semester II**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Practical		Examination Scheme Marks		Total Credits	Total Marks
				L	T	Lab	CA	ESE	CA	ESE		
T7387	070122201	Engineering Mathematics II	BS	4	2	-	-	-	50	75	5	125
T7391	070122202	Physics	BS	3	-	-	-	-	30	45	3	75
T7392	070122203	Physics Lab	BS	-	-	2	10	15	-	-	1	25
T7418	070122204	Environmental and Civil Engineering	ES	3	-	-	-	-	30	45	3	75
T7458	070122205	Environmental and Civil Engineering Lab	ES	-	-	2	10	15	-	-	1	25
T7934	070122206	C Programming	PC	2	-	-	-	-	20	30	2	50
T7935	070122207	C Programming Lab	PC	-	-	4	20	30	-	-	2	50

T7947	070122208	Computational Thinking and Problem Solving	PC	2					20	30	2	50
T7658	070122209	Workshop Practice	ES	-	-	4	20	30	-	-	2	50
T7604	070122210	Basic Mechanical Engineering	ES	3	-	-	-	-	30	45	3	75
T7605	070122211	Basic Mechanical Engineering Lab	ES	-	-	2	10	15	-	-	1	25
<b>Total</b>				<b>17</b>	<b>2</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>180</b>	<b>270</b>	<b>25</b>	<b>625</b>

**Semester III**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7995	070122301	Discrete Mathematics and Probability Theory	BS	3	2	-	-	-	40	60	4	100
T7512	070122302	Programming Paradigms	PC	3	-	-	-	-	30	45	3	75
T7513	070122303	Programming Paradigms Lab	PC	-	-	2	10	15	-	-	1	25
T7495	070122304	Fundamentals of Data Structures	PC	4	-	-	-	-	40	60	4	100
T7496	070122305	Fundamentals of Data Structures Lab	PC	-	-	4	20	30	-	-	2	50
T7996	070122306	Computer Organization	PC	3	-	-	-	-	30	45	3	75
T7997	070122307	Digital Electronics and Logic Design	PC	3	-	-	-	-	30	45	3	75
T7555	070122308	Digital Electronics and Logic Design Lab	PC	-	-	2	10	15	-	-	1	25
T2353	070122309	Inter Institute Course II : Entrepreneurship	OE	2	-	-	-	-	50	-	2	50
T8000	070122310	Service Learning	HS	4	-	-	-	-	100	-	4	100
<b>Total</b>				<b>22</b>	<b>2</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>320</b>	<b>255</b>	<b>27</b>	<b>675</b>

**Semester IV**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Credit	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7388	070122401	Engineering Mathematics-III	BS	3	2	-	-	-	40	60	4	100
T7998	070122402	Operating Systems	PC	4	-	-	-	-	40	60	4	100
T7999	070122403	Java Programming	PC	4	-	-	-	-	40	60	4	100
TE7001	070122404	Java Programming Lab	PC	-	-	4	20	30	-	-	2	50
TE7002	070122405	Data Structures	PC	4	-	-	-	-	40	60	4	100
TE7003	070122406	Data Structures Lab	PC	-	-	4	20	30	-	-	2	50
T7577	070122407	Microprocessor Techniques	PC	3	-	-	-	-	30	45	3	75
T7511	070122408	Operating Systems Lab	PC	-	-	2	10	15	-	-	1	25
T7578	070122409	Microprocessor Techniques Lab	PC	-	-	2	10	15	-	-	1	25
<b>Liberal Arts (Choose any one from following)</b>												
T6184	070122410	Basic German-I	MC	2	-	-	-	-	50	-	2	50
T6186	070122411	Basic French-I	MC	2	-	-	-	-	50	-	2	50



T6188	070122412	Basic Spanish-I	MC	2	-	-	-	-	50	-	2	50
		<b>Total</b>		<b>20</b>	<b>2</b>	<b>12</b>	<b>60</b>	<b>90</b>	<b>240</b>	<b>285</b>	<b>27</b>	<b>675</b>
T4005	070122413	Integrated Disaster Management	GP	-	-	-	-	-	-	-	0	Letter Grade

**Semester V**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7518	070122501	Theory of Computation	PC	3	2	-	-	-	40	60	4	100
T7486	070122502	Data Base Management Systems	PC	4	-	-	-	-	40	60	4	100
T7487	070122503	Data Base Management Systems Lab	PC	-	-	4	20	30	-	-	2	50
T7908	070122504	Computer Networks	PC	3	-	-	-	-	30	45	3	75
T7482	070122505	Computer Networks Lab	PC	-	-	2	10	15	-	-	1	25
T7490	070122506	Design and Analysis of Algorithms	PC	4	-	-	-	-	40	60	4	100
T7491	070122507	Design and Analysis of Algorithms Lab	PC	-	-	2	10	15	-	-	1	25
T7516	070122508	Software Engineering	PC	3	2	-	-	-	40	60	4	100
<b>Open Elective-I (Choose any one from the following)</b>												
T7457	070122509	Integrated Water Resources Development and Management	OE	3	-	-	-	-	30	45	3	75
T7499	070122510	JAVA	OE	3	-	-	-	-	30	45	3	75
T7574	070122511	MATLAB	OE	3	-	-	-	-	30	45	3	75
T7616	070122512	Fundamentals of Automotive Technology	OE	3	-	-	-	-	30	45	3	75
T7020	070122513	Nanotechnology	OE	3	-	-	-	-	30	45	3	75
T7393	070122514	Computer based Statistical Packages	OE	3	-	-	-	-	30	45	3	75
		<b>Total</b>		<b>20</b>	<b>4</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>220</b>	<b>330</b>	<b>26</b>	<b>650</b>
	070122515	Energy Studies	MC	-	-	-	-	-	-	-	0	Letter Grade

For 2 hours tutorial, there will be 1 hour classroom teaching and 1 hour for projects/self-study/assignments.

**Semester VI**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
<b>Group A</b>												
T7191	070122601	Internship(6Months)	PIS	-	-	-	195	130	-	-	13	325
T7671	070122602	Seminar	PIS	-	-	-	100	-	-	-	4	100
		<b>Total</b>		-	-	-	<b>295</b>	<b>130</b>	-	-	<b>17</b>	<b>425</b>
<b>OR</b>												
	070122603	Global Immersion Program	PC	-	-	-	295	130	-	-	-	-
		<b>Total</b>		-	-	-	<b>295</b>	<b>130</b>	-	-	<b>17</b>	<b>425</b>

**OR  
Group B**

T7905	070122604	Internship	PIS	-	-	10	75	50	-	-	5	125
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		(6-8 Weeks)										
T7048	070122605	Project Management	GP	4	-	-	-	-	40	60	4	100
T7399	070122606	Software Testing and Quality Assurance	PC	3	-	-	-	-	30	45	3	75
T7080	070122607	Software Testing and Quality Assurance Lab	PC	-	-	2	10	15	-	-	1	25
T7509	070122608	Open Source Technologies	PC	3	-	-	-	-	30	45	3	75
	070122609	Open Source Technologies Lab	PC	-	-	2	10	15	-	-	1	25
		<b>Total</b>		<b>10</b>	<b>-</b>	<b>14</b>	<b>95</b>	<b>80</b>	<b>100</b>	<b>150</b>	<b>17</b>	<b>425</b>

**Semester VII**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7517	070122701	System Programming	PC	3	-	-	-	-	30	45	3	75
T7507	070122702	Object Oriented Analysis and Design	PC	3	-	-	-	-	30	45	3	75
T7508	070122723	Object Oriented Analysis and Design Lab	PC	-	-	2	10	15	-	-	1	25
TE7008	070122703	Distributed Systems and Resource Management	PC	3	-	-	-	-	30	45	3	75
T7903	070122704	Distributed Systems and Resource management Lab	PC	-	-	2	10	15	-	-	1	25
T6274	070122705	Foundation of Ethics	MC	2	-	-	-	-	50	-	2	50
TE7038	070122706	Project planning and charter	PIS	-	-	4	20	30	-	-	2	50

**Elective-I (Choose any one from the following)**

TE7010	070122707	Data Warehousing and Mining	PE	4	-	-	-	-	40	60	4	100
TE7011	070122708	Artificial Intelligence	PE	4	-	-	-	-	40	60	4	100
TE7012	070122709	Network Analysis and Design	PE	4	-	-	-	-	40	60	4	100

**Elective-I Lab(Choose any one from the following)**

TE7013	070122710	Data Warehousing and Mining Lab	PE	-	-	2	10	15	-	-	1	25
TE7014	070122711	Artificial Intelligence Lab	PE	-	-	2	10	15	-	-	1	25
TE7015	070122712	Network Analysis and Design Lab	PE	-	-	2	10	15	-	-	1	25

**Elective -II (Choose any one from the following)**

TE7016	070122713	Big Data Stores	PE	4	-	-	-	-	40	60	4	100
T7104	070122714	Neural Networks	PE	4	-	-	-	-	40	60	4	100

TE7017	070122715	Network Security	PE	4	-	-	-	-	40	60	4	100
<b>Open Elective-II (Choose any one from the following)</b>												
T7456	070122716	Town and Country Planning	OE	3	-	-	-	-	30	45	3	75
T7509	070122717	Open Source Technologies	OE	3	-	-	-	-	30	45	3	75
T7474	070122718	Basics of Database	OE	3	-	-	-	-	30	45	3	75
T7584	070122719	Printed Circuit Board (PCB) Design	OE	3	-	-	-	-	30	45	3	75
T7650	070122720	Six Sigma	OE	3	-	-	-	-	30	45	3	75
T7394	070122721	Smart Materials	OE	3	-	-	-	-	30	45	3	75
<b>Total</b>				<b>22</b>	<b>-</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>250</b>	<b>300</b>	<b>27</b>	<b>675</b>
	070122722	Soft skills	MC	-	-	-	-	-	-	-	-	Letter Grade

For 2 hours tutorial, there will be 1 hour classroom teaching and 1 hour for projects/self-study/assignments.

**Semester VIII**

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
TE7007	070122801	Skill Development Lab	PC	-	-	8	40	60	-	-	4	100
T7477	070122802	Compiler Construction	C	3	-	-	-	-	30	45	3	75
T7478	070122803	Compiler Construction Lab	C	-	-	2	10	15	-	-	1	25
TE7018	070122804	Business Analytics	PC	3	-	-	-	-	30	45	3	75
T7804	070122805	Project	PIS	-	-	8	40	60	-	-	4	100
T7674	070122806	Cyber Security	PC	2	-	-	-	-	50	-	2	50
<b>Elective – III(Choose any one of the following)</b>												
TE7019	070122807	Big Data Analytics	PE	4	-	-	-	-	40	60	4	100
TE7020	070122808	Wireless Sensor Networks	PE	4	-	-	-	-	40	60	4	100
TE7021	070122809	Optimization Techniques & Algorithms	PE	4	-	-	-	-	40	60	4	100
<b>Elective – IV (Choose any one of the following)</b>												
TE7022	070122810	Predictive Analytics	PE	4	-	-	-	-	40	60	4	100
T7527	070122811	Internet of Things	PE	4	-	-	-	-	40	60	4	100
TE7566	070122812	Advanced Deep Learning	PE	4	-	-	-	-	40	60	4	100
				<b>16</b>	<b>0</b>	<b>18</b>	<b>90</b>	<b>135</b>	<b>190</b>	<b>210</b>	<b>25</b>	<b>625</b>

For 2 hours tutorial, there will be 1 hour classroom teaching and 1 hour for projects/self-study/assignments.





HS- Humanities and Social Sciences  
L- Lecture , T-Tutorial

ES - Engineering Sciences

PIS- Project, Internship, Seminar

OE- Open Electives

CA- Continuous Assessment

ESE- End Semester Examination

Practical, CA, ESE are separate heads of Passing

PE- Professional Elective

BS – Basic Sciences

PD - Professional Development Course

MC - Mandatory Course

PC – Professional Core

Practical external examination may be conducted by alternate internal faculty

### Summary

Semester	Internal Credits	External Credits	Credits	Total Marks
I	4	22	26	650
II	0	25	25	625
III	6	21	27	675
IV	2	25	27	675
V	0	26	26	650
VI Group A	4	13	17	425
VI Group B	0	17	17	425
VII	2	25	27	675
VIII	2	23	25	625
<b>Total</b>	<b>20 / 16</b>	<b>180 / 184</b>	<b>200</b>	<b>5000</b>

\* Integrated Disaster Management is mandatory for the award of degree.

#### Guidelines for Evaluating Letter Grade Course:

- 1) All Letter Grade course i.e. courses having zero credits are non-credit mandatory courses.
- 2) All Letter grade course should be conducted as "activity/assignment".
- 3) Student must attend these courses and only be graded as "pass grade" if he/she has minimum 80 % attendance in that particular course.
- 4) Faculty should evaluate these courses as per required numbers components in accordance with NBA's Course Outcomes.