

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Electronics & Tele-Communication Engineering)**  
**Programme Structure 2018-22**

<b>1. OBJECTIVE</b>	<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 &amp; 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>			
<b>2. DURATION (IN MONTHS)</b>	48 (Full Time)			
<b>3. INTAKE</b>	120			
<b>4. RESERVATION</b>	<b>I. Within the sanctioned intake</b>	<b>a) SC (In Percentage)</b>	<b>b) ST (In Percentage)</b>	<b>c) Differently abled (In Percentage)</b>
		15	7.5	3
	<b>II. Over and above the sanctioned intake</b>	<b>a) Kashmiri Migrants (In Seats)</b>		<b>b) International Students (In Percentage)</b>
		2		15
<b>5. ELIGIBILITY</b>	<p>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 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</p>			

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		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.			
6.	<b>SELECTION PROCEDURE</b>	Merit list by valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Maharashtra Common Entrance Test (MHT-CET)			
7.	<b>MEDIUM OF INSTRUCTION</b>	English			
8.	<b>PROGRAMME PATTERN</b>	Semester			
9.	<b>COURSE &amp; SPECIALIZATION</b>	As per Annexure A			
10.	<b>FEE</b>		<b>Academic Fee p.a</b>	<b>Institute Deposit</b>	<b>Total</b>
		<b>Indian Students</b>	260000	20000	280000
		<b>International Students (USD equivalent to INR)</b>	390000	20000	410000
11.	<b>ASSESSMENT</b>	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.	<b>STANDARD OF PASSING</b>	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.	<b>AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE</b>	Bachelor of Technology (Electronics and Telecommunication 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.			

14. NATURE WISE DISTRIBUTION OF CREDITS							
Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	24	2	0	0	0	0	26
2	24	0	0	0	0	0	24
3	29	0	0	0	0	0	29
4	26	0	0	2	0	0	28
5	25	0	0	0	0	1*	25
6	14	0	0	11	0	0	25
7	15	0	0	11	0	1*	26
8	0	17	0	0	0	0	17
<b>Total</b>	<b>157</b>	<b>19</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>200</b>

\* Satisfactory completion of the non letter grade course 'Integrated Disaster Management' and 'Certificate in COVID-19 Care for the Community' is mandatory for award of degree.

The revised programme structure supersedes the previously approved programme structure dated 27/11/2020 for the programme.

**This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council. 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.**

**Head - Academics**

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**Annexure A**

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
<b>Semester : 1</b>									
<b>Generic Core Courses</b>									
T7385	070123101	Engineering Mathematics -I		5	50	75	0	0	125
T7381	070123102	Chemistry		3	30	45	0	0	75
T7936	070123104	Fundamentals of Electronic Devices and Circuits		3	30	45	0	0	75
T7937	070123105	Fundamentals of Electronic Devices and Circuits Lab		1	0	0	10	15	25
T7414	070123106	Engineering Mechanics		3	30	45	0	0	75
T7415	070123107	Engineering Mechanics Lab		1	0	0	10	15	25
T7924	070123108	Engineering Graphics		2	20	30	0	0	50
T7925	070123109	Engineering Graphics Lab		2	0	0	20	30	50
T7943	070123110	Technical English & Communication Skill		2	50	0	0	0	50
T7944	070123111	Technical English & Communication Skill Lab		1	0	0	10	15	25
T7382	070123103	Chemistry Lab		1	0	0	10	15	25
<b>Total</b>				<b>24</b>	<b>210</b>	<b>240</b>	<b>60</b>	<b>90</b>	<b>600</b>
<b>Generic Elective Courses Group</b>									
T7946	070123112	Economics for Engineers		2	50	0	0	0	50
T7945	070123113	Law for Engineers		2	20	30	0	0	50
<b>Total Required Credits</b>				<b>2</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>
<b>Semester : 2</b>									
<b>Generic Core Courses</b>									
T7391	070123202	Physics		3	30	45	0	0	75
T7392	070123203	Physics lab		1	0	0	10	15	25
T7484	070123206	Computer Programming		2	20	30	0	0	50
T7485	070123207	Computer Programming Lab		1	0	0	10	15	25
T7938	070123208	Fundamentals of Electric Circuits		2	20	30	0	0	50
T7658	070123209	Workshop Practice		2	0	0	20	30	50
T7604	070123210	Basic Mechanical Engineering		3	30	45	0	0	75
T7458	070123205	Environmental & Civil Engineering Lab		1	0	0	10	15	25
T7605	070123211	Basic Mechanical Engineering lab		1	0	0	10	15	25
T7387	070123201	Engineering Mathematics-II		5	50	75	0	0	125

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T7418	070123204	Environmental & Civil Engineering		3	30	45	0	0	75
<b>Total</b>				<b>24</b>	<b>180</b>	<b>270</b>	<b>60</b>	<b>90</b>	<b>600</b>
<b>Semester : 3</b>									
<b>Generic Core Courses</b>									
T7586	070123303	Semiconductor Devices and Circuits Applications Lab		1	0	0	10	15	25
T7553	070123304	Digital Electronics		4	40	60	0	0	100
T7556	070123305	Digital Electronics Lab		1	0	0	10	15	25
T7549	070123306	Data Structures and Algorithms		4	40	60	0	0	100
TE7027	070123311	Minor Projects in Electronics Circuits		1	0	0	10	15	25
T2353	070123312	Entrepreneurship		2	50	0	0	0	50
T7550	070123307	Data Structures and Algorithms Lab		1	0	0	10	15	25
T7815	070123308	Network Analysis & Synthesis		3	30	45	0	0	75
T7563	070123309	Electronic Measurements And Instrumentation		3	30	45	0	0	75
T7564	070123310	Electronic Measurements And Instrumentation Lab		1	0	0	10	15	25
T7587	070123302	Semiconductor Devices and Circuit Applications		4	40	60	0	0	100
T7388	070123301	Engineering Mathematics-III		4	40	60	0	0	100
<b>Total</b>				<b>29</b>	<b>270</b>	<b>330</b>	<b>50</b>	<b>75</b>	<b>725</b>
<b>Semester : 4</b>									
<b>Generic Core Courses</b>									
T7960	070123401	Statistics, Probability and Numerical Methods		3	30	45	0	0	75
T7961	070123402	Statistics, Probability and Numerical Methods lab		1	0	0	10	15	25
TE7083	070123403	Signals and Systems		3	30	45	0	0	75
T7589	070123404	Signals and Systems Lab		1	0	0	10	15	25
T7547	070123405	Control Systems		4	40	60	0	0	100
T7548	070123406	Control Systems Lab		1	0	0	10	15	25
TE7084	070123408	Analog Circuit Design		3	30	45	0	0	75
T7562	070123407	Electromagnetic Field Theory		4	40	60	0	0	100
TE7028	070123410	Principles of Communication		4	40	60	0	0	100

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TE7029	070123411	Principles of Communication Lab		1	0	0	10	15	25
T7536	070123409	Analog Circuit Design Lab		1	0	0	10	15	25
<b>Total</b>				<b>26</b>	<b>210</b>	<b>315</b>	<b>50</b>	<b>75</b>	<b>650</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
T6184	070123413	Basic German I		2	50	0	0	0	50
T6186	070123414	Basic French I		2	50	0	0	0	50
T6188	070123415	Basic Spanish I		2	50	0	0	0	50
<b>Total Required Credits</b>				<b>2</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>
<b>Semester : 5</b>									
<b>Generic Core Courses</b>									
T7575	070123501	Microcontrollers and Applications		4	40	60	0	0	100
T7576	070123502	Microcontrollers and Applications Lab		1	0	0	10	15	25
T7558	070123503	Digital Signal Processing		4	40	60	0	0	100
T7559	070123504	Digital Signal Processing Lab		1	0	0	10	15	25
TE7085	070123505	Power Electronics		3	30	45	0	0	75
T7583	070123506	Power Electronics Lab		1	0	0	10	15	25
TE7086	070123507	VLSI Design		3	30	45	0	0	75
T7592	070123508	VLSI Design Lab		1	0	0	10	15	25
TE7087	070123509	Microwave Communication		3	30	45	0	0	75
TE7031	070123510	Microwave Communication Lab		1	0	0	10	15	25
T4005	070123512	Integrated Disaster Management *		0	0	0	0	0	Non Letter Grade
T7473	070123511	Artificial Intelligence		3	30	45	0	0	75
<b>Total</b>				<b>25</b>	<b>200</b>	<b>300</b>	<b>50</b>	<b>75</b>	<b>625</b>
<b>Semester : 6</b>									
<b>Generic Core Courses</b>									
TE7036	070123601	Embedded Systems and RTOS		3	30	45	0	0	75
TE7037	070123602	Embedded Systems and RTOS Lab		1	0	0	10	15	25
TE7034	070123603	Wireless and Mobile Communication		4	40	60	0	0	100
TE7035	070123604	Wireless and Mobile Communication Lab		1	0	0	10	15	25

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T7968	070123605	Foundation of Ethics		2	50	0	0	0	50
TE7038	070123606	Project Planning and Charter		2	0	0	20	30	50
T7594	070123607	Product Design Lab		1	0	0	10	15	25
<b>Total</b>				<b>14</b>	<b>120</b>	<b>105</b>	<b>50</b>	<b>75</b>	<b>350</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
TE7088	070123608	Digital Image Processing	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7040	070123609	Robotics and Automation	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7042	070123610	Computer Communication Networks	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7089	070123611	Modern Control Theory	Electronics & Tele-communication Engineering	3	30	45	0	0	75
<b>Total Required Credits</b>				<b>3</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>75</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
T7094	070123612	Digital Image Processing Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7041	070123613	Robotics and Automation Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7043	070123614	Computer Communication Networks Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7039	070123615	Modern Control Theory Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
<b>Total Required Credits</b>				<b>1</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>15</b>	<b>25</b>

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<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
TE7044	070123616	Pattern Recognition and Machine Learning	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7045	070123617	IoT and Applications	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7090	070123618	Antenna and Wave Propagation	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7640	070123619	Mechatronics	Electronics & Tele-communication Engineering	3	30	45	0	0	75
<b>Total Required Credits</b>				<b>3</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>75</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
TE7047	070123620	Pattern Recognition and Machine Learning Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7048	070123621	IoT and Applications Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7091	070123622	Antenna and Wave Propagation Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
T7101	070123623	Mechatronics Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
<b>Total Required Credits</b>				<b>1</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>15</b>	<b>25</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
T7457	070123624	Integrated Water Resources Development and Management	Electronics & Tele-communication Engineering	3	30	45	0	0	75

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T7499	070123625	Java	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7574	070123626	MATLAB	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7616	070123627	Fundamentals of Automotive Technology	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7020	070123628	Nanotechnology	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7393	070123629	Computer Based Statistical Packages	Electronics & Tele-communication Engineering	3	30	45	0	0	75
<b>Total Required Credits</b>				<b>3</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>75</b>
<b>Semester : 7</b>									
<b>Generic Core Courses</b>									
TE7032	070123701	Optical Communication		4	40	60	0	0	100
TE7092	070123702	Optical Communication Lab		1	0	0	10	15	25
T8000	070123703	Service Learning		4	100	0	0	0	100
T7804	070123704	Project		4	0	0	40	60	100
T7674	070123705	Cyber Security		2	50	0	0	0	50
TH4272	070123724	Certificate in COVID-19 Care for the Community *		0	0	0	0	0	Non Letter Grade
<b>Total</b>				<b>15</b>	<b>190</b>	<b>60</b>	<b>50</b>	<b>75</b>	<b>375</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
T7112	070123706	VLSI Digital Signal Processing System	Electronics & Tele-communication Engineering	4	40	60	0	0	100
T7542	070123707	CMOS VLSI Design	Electronics & Tele-communication Engineering	4	40	60	0	0	100

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TE7049	070123708	Radar and Electronic Navigation Systems	Electronics & Tele-communication Engineering	4	40	60	0	0	100
TE7050	070123709	Biomedical Instrumentation	Electronics & Tele-communication Engineering	4	40	60	0	0	100
<b>Total Required Credits</b>				<b>4</b>	<b>40</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>100</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
TE7051	070123710	Digital Speech and Audio Processing	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7094	070123711	Advanced FPGA Design	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7052	070123712	Information Theory and Coding and Techniques	Electronics & Tele-communication Engineering	3	30	45	0	0	75
TE7053	070123713	Mobile Robotics	Electronics & Tele-communication Engineering	3	30	45	0	0	75
<b>Total Required Credits</b>				<b>3</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>75</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
TE7054	070123714	Digital Speech and Audio Processing Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7095	070123715	Advanced FPGA Design Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
TE7055	070123716	Information Theory and Coding Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25

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TE7056	070123717	Mobile Robotics Lab	Electronics & Tele-communication Engineering	1	0	0	10	15	25
<b>Total Required Credits</b>				<b>1</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>15</b>	<b>25</b>
<b>Specialization Elective : Electronics &amp; Tele-communication Engineering</b>									
T7456	070123718	Town & Country Planning	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7509	070123719	Open Source Technologies	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7474	070123720	Basics of Database	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7584	070123721	Printed Circuit Board (PCB) Design	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7650	070123722	Six sigma	Electronics & Tele-communication Engineering	3	30	45	0	0	75
T7394	070123723	Smart Materials	Electronics & Tele-communication Engineering	3	30	45	0	0	75
<b>Total Required Credits</b>				<b>3</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>75</b>
<b>Semester : 8</b>									
<b>Generic Elective Courses Group</b>									
T7912	070123801	Internship		13	0	0	130	195	325
T7671	070123802	Seminar		4	0	0	40	60	100
<b>Total Required Credits</b>				<b>17</b>	<b>0</b>	<b>0</b>	<b>170</b>	<b>255</b>	<b>425</b>
<b>Generic Elective Courses Group</b>									
T7905	070123803	Internship(6-8 Weeks)		5	0	0	50	75	125
T7048	070123804	Project Management		4	40	60	0	0	100
T7139	070123805	Software Testing and Quality Assurance		3	30	45	0	0	75

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T7080	070123806	Software Testing and Quality Assurance Lab		1	0	0	10	15	25
TE7033	070123807	Satellite Communication		4	40	60	0	0	100
<b>Total Required Credits</b>				<b>17</b>	<b>110</b>	<b>165</b>	<b>60</b>	<b>90</b>	<b>425</b>

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	4	22	26	650
Semester 2	0	24	24	600
Semester 3	2	27	29	725
Semester 4	2	26	28	700
Semester 5	0	25	25	625
Semester 6	2	23	25	625
Semester 7	6	20	26	650
Semester 8	0	17	17	425
<b>Total</b>	<b>16</b>	<b>184</b>	<b>200</b>	<b>5000</b>