

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Electronics and Telecommunication Engineering)**  
**Programme Structure 2025-29**

<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. 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		20
<b>5. ELIGIBILITY</b>	<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</p> <p>Obtained at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together.</p> <p>OR</p> <p>Passed D.Voc. Stream in the same or allied sector.</p> <p>(The Constituent will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from</p>			

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		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 at least 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 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.	<b>SELECTION PROCEDURE</b>	Merit list by a valid score of Symbiosis Entrance Test (SIT EEE) or Joint Entrance Examination (JEE - Mains) or Any State Government Engineering Entrance Test.
7.	<b>MEDIUM OF INSTRUCTION</b>	English
8.	<b>PROGRAMME PATTERN</b>	Semester
9.	<b>COURSE &amp; SPECIALISATION</b>	Annexure A: Bachelor of Technology (Electronics and Telecommunication) Students may pursue optional 'Honours' specialisation in one of the specialisation areas by completing additional 20 credits in Semester - 4,5, 6, 7 as specified in Annexure B or optional 'Minor' Specialisation by completing additional 18 credits in Semester - 3, 4, 5, 6 as specified in Annexure C. Annexure B: Honours specialisation area 1.Embedded Systems 2.Semiconductor Technology Annexure C: Minor specialisation area 1.Artificial Intelligence and Machine Learning 2. Cyber Security

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10.	FEE		Academic Fee p.a	Institute Deposit	Total
	<b>Indian Students (Amount in INR)</b>		325000	20000	345000
	<b>International Students</b>	<b>NRI/ PIO/ OCI Category (Amount in US\$)</b>	6100	275	6375
		<b>Foreign National Category (Amount in US\$)</b>	1300	275	1575
11.	<b>ASSESSMENT</b>	The theory courses will have 40% Continuous Assessment and 60% Term End [University] examination, Lab courses (Practical) 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.	<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</b>	Bachelor of Technology (Electronics and Telecommunication) OR Bachelor of Technology (Electronics and Telecommunication) with Honours in Embedded Systems/ Semiconductor Technology OR Bachelor of Technology (Electronics and Telecommunication) with Minor in Artificial Intelligence and Machine Learning / Cyber Security as applicable 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.

**14. CLASSIFICATION OF CREDITS**

Semester	Basic Sciences	Engineering Sciences	Professional Core	Professional Elective	Humanities and Social Sciences including Management	Multidisciplinary Open Electives	Project/ Internship/ Seminar	Indian Knowledge System	Total Credits	No. of Mandatory Non-Credit Course/s	No. of Non-Credit Audit Course/s
<b>Track 1</b>											
1	8	8	3	0	1	0	0	0	20	0	As per the student's choice
2	8	5	3	0	2	0	0	2	20	1*	
3	4	0	15	0	1	0	0	0	20	1*	
4	0	2	10	0	3	3	2	0	20	1*	
5	0	1	12	4	0	3	2	0	22	2*	
6	0	0	11	8	0	3	0	0	22	1*	
7	0	0	9	8	1	0	4	0	22	1*	
8	0	0	0	0	0	0	14	0	14	0	
<b>Total</b>	<b>20</b>	<b>16</b>	<b>63</b>	<b>20</b>	<b>8</b>	<b>9</b>	<b>22</b>	<b>2</b>	<b>160</b>	<b>0</b>	
<b>Track 2</b>											
1	8	8	3	0	1	0	0	0	20	0	As per the student's choice
2	8	5	3	0	2	0	0	2	20	1*	
3	4	0	15	0	1	0	0	0	20	1*	
4	0	2	10	0	3	3	2	0	20	1*	
5	0	1	12	4	0	3	2	0	22	2*	
6	0	0	11	8	0	3	0	0	22	1*	
7	0	0	6	0	0	0	16	0	22	1*	

8	0	0	0	0	0	0	14	0	14	0	
<b>Total</b>	<b>20</b>	<b>16</b>	<b>60</b>	<b>12</b>	<b>7</b>	<b>9</b>	<b>34</b>	<b>2</b>	<b>160</b>	<b>0</b>	
<b>Optional Additional Courses (Honours)</b>											
4	0	0	4	0	0	0	0	0	4	0	As per the student's choice
5	0	0	3	0	0	0	0	0	3	0	
6	0	0	7	0	0	0	0	0	7	0	
7	0	0	0	0	0	0	6	0	6	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>20</b>	<b>0</b>	
<b>Optional Additional Courses (Minor)</b>											
3	0	0	4	0	0	0	0	0	4	0	As per the student's choice
4	0	0	4	0	0	0	0	0	4	0	
5	0	0	4	0	0	0	0	0	4	0	
6	0	0	3	0	0	0	3	0	6	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>18</b>	<b>0</b>	

\* Satisfactory completion of non credit courses 'Health and Wellness', 'Vasudhaiva Kutumbakam' and 'Career Essentials I to V' is mandatory for award of degree.

**Additional Note:** #Health and Wellness Module I and Module II will be conducted during the semesters mentioned in the programme structure. However, the course will be listed on the students' grade sheets as "Health and Wellness" in the semester in which the institute's course code is officially assigned.

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.

Director - Academics

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**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 1</b>													
<b>Generic Core Courses</b>													
TEE7238	0701230101	Calculus and Linear Algebra	BS		3	1	0	0	0	40	60	4	100
TEE7241	0701230102	Engineering Chemistry for Semiconductor Fabrication	BS		3	0	2	15	10	30	45	4	100
TEE7314	0701230103	Fundamentals of Electrical and Electronics Engineering	ES		2	1	2	15	10	30	45	4	100
TEE7299	0701230104	Programming in C	ES		0	0	4	50	0	0	0	2	50
TM2278	0701230105	Introduction to Environment and Sustainability	ES		0	0	2	25	0	0	0	1	25
TEE7364	0701230106	Tinker and IDEA Lab	ES		0	0	2	25	0	0	0	1	25
TEE7308	0701230107	Computational Techniques for Electronics Engineering	PC		2	0	2	25	0	50	0	3	75
T6873	0701230108	Creative Thinking	HSMC		1	0	0	0	0	25	0	1	25
<b>Total</b>					<b>11</b>	<b>2</b>	<b>14</b>	<b>155</b>	<b>20</b>	<b>175</b>	<b>150</b>	<b>20</b>	<b>500</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TEE7234	0701230201	Applied Mathematics and Techniques	BS		3	1	0	0	0	40	60	4	100
TEE7252	0701230202	Physics of Electronics and Semiconductors	BS		3	0	2	15	10	30	45	4	100
TEE7293	0701230203	Exploratory Data Analysis using Python	ES		1	0	4	50	0	25	0	3	75
TEE7324	0701230204	Engineering Graphics	ES		0	0	4	30	20	0	0	2	50

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TEE7309	0701230205	Digital Circuits and Logic Design	PC		2	0	2	15	10	20	30	3	75
THM6150	0701230206	Technical and Professional Communication Skills	HSMC		0	0	2	25	0	0	0	1	25
T6732	0701230207	Critical Thinking	HSMC		1	0	0	0	0	25	0	1	25
THM6144	0701230208	Indian Knowledge Systems	IKS		2	0	0	0	0	50	0	2	50
TEE7265	0701230209	Career Essentials - I *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>12</b>	<b>1</b>	<b>14</b>	<b>135</b>	<b>40</b>	<b>190</b>	<b>135</b>	<b>20</b>	<b>500</b>
<b>Semester : 3</b>													
<b>Generic Core Courses</b>													
TEE7253	0701230301	Transforms and Vector Calculus	BS		3	1	0	0	0	40	60	4	100
P4281	0701230302	Microcontrollers and Applications	PC		3	0	2	25	0	75	0	4	100
P4270	0701230303	Electronic Devices and Circuits	PC		3	0	2	15	10	30	45	4	100
P4276	0701230304	Analog and Digital Communication	PC		3	0	2	15	10	30	45	4	100
P5240	0701230305	Network Analysis and Synthesis	PC		2	1	0	0	0	75	0	3	75
P4411	0701230306	Principles of Economics	HSMC		1	0	0	0	0	25	0	1	25

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4781	0701230307	Career Essentials - II *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TH4788		Health and Wellness Module I #	MC		0	0	0	0	0	0	0		0
<b>Total</b>					<b>15</b>	<b>2</b>	<b>6</b>	<b>55</b>	<b>20</b>	<b>275</b>	<b>150</b>	<b>20</b>	<b>500</b>
<b>Semester : 4</b>													
<b>Generic Core Courses</b>													
P4271	0701230401	Data Structures and Algorithms	ES		0	0	4	50	0	0	0	2	50
P4269	0701230402	Analog Circuit Design	PC		3	0	2	15	10	30	45	4	100
P4268	0701230403	Computer Networks	PC		2	0	2	15	10	20	30	3	75
P4778	0701230404	Electromagnetic Field Theory with Antenna	PC		3	0	0	0	0	30	45	3	75
P4618	0701230405	Service Learning	HSMC		0	0	4	50	0	0	0	2	50
T2646	0701230406	Entrepreneurship Venture	HSMC		1	0	0	0	0	25	0	1	25
TE7290	0701230407	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
P4782	0701230408	Career Essentials - III *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TH4789		Health and Wellness Module II #	MC		0	0	0	0	0	0	0	0	0
<b>Total</b>					<b>9</b>	<b>0</b>	<b>16</b>	<b>180</b>	<b>20</b>	<b>105</b>	<b>120</b>	<b>17</b>	<b>425</b>
<b>Multidisciplinary Open Elective (Choose any one course)</b>													
P5208	0701230409	Quantum Computing for Engineers	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5209	0701230410	Mathematics for Data Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4627	0701230411	Smart Cities Planning and Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4633	0701230412	Intelligent Waste Management Techniques	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4811	0701230413	Web Technologies	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4812	0701230414	Data Science	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
TE7351	0701230415	3D Printing and Prototyping	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P5275	0701230416	Battery Management Systems	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4787	0701230417	Fundamentals of Machine Learning	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P4788	0701230418	AI System Development	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5214	0701230419	Fundamentals of Robotics and Automation	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5215	0701230420	Robotic Process Automation	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Generic Core Courses</b>													
P5230	0701230501	Design Thinking	ES		1	0	0	0	0	25	0	1	25
P4279	0701230502	Digital Signal Processing	PC		2	1	2	15	10	30	45	4	100
P4280	0701230503	VLSI Design	PC		3	0	2	15	10	30	45	4	100
P4777	0701230504	Probability, Random Variables and Stochastic Process	PC		3	1	0	0	0	40	60	4	100
TE7291	0701230505	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
P4784	0701230506	Career Essentials - IV *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
SMC001	0701230507	Vasudhaiva Kutumbakam *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>9</b>	<b>2</b>	<b>8</b>	<b>80</b>	<b>20</b>	<b>125</b>	<b>150</b>	<b>15</b>	<b>375</b>
<b>Programme Elective (Choose any one course)</b>													
P4285	0701230508	Antenna and Wave Propagation	PE		3	0	2	15	10	30	45	4	100

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4286	0701230509	Digital Image Processing	PE		3	0	2	15	10	30	45	4	100
P4287	0701230510	Digital Design and Verification	PE		3	0	2	15	10	30	45	4	100
P4288	0701230511	Operating Systems Fundamentals	PE		3	0	2	15	10	30	45	4	100
P4289	0701230512	Robotics and Automation	PE		3	0	2	15	10	30	45	4	100
P4290	0701230513	Power Electronics	PE		3	0	2	15	10	30	45	4	100
<b>Total Required Credits</b>								<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Multidisciplinary Open Elective (Choose any one course)</b>													
P5210	0701230514	Financial Mathematics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5211	0701230515	Advanced Materials	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4656	0701230516	Sustainability Engineering- Design and Innovation	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4658	0701230517	Occupational Health and Safety Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4840	0701230518	Introduction to Cloud Computing	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4844	0701230519	Agile Methodologies	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P5277	0701230520	Electric and Hybrid Vehicles	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
T7650	0701230521	Six Sigma	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4789	0701230522	Optimization for ML Systems	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4790	0701230523	Deep Learning Essentials	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5216	0701230524	Industrial Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5217	0701230525	PLC and SCADA	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Semester : 6</b>													
<b>Generic Core Courses</b>													
P4328	0701230601	Embedded System Design	PC		3	0	2	15	10	30	45	4	100
P4327	0701230602	Wireless Communication	PC		3	0	2	25	0	75	0	4	100
F0003	0701230603	Flexi-Credit Course	PC		1	0	4	50	0	25	0	3	75
P4785	0701230604	Career Essentials - V *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>7</b>	<b>0</b>	<b>8</b>	<b>90</b>	<b>10</b>	<b>130</b>	<b>45</b>	<b>11</b>	<b>275</b>
<b>Programme Elective-I (Choose any one course)</b>													
P4329	0701230605	Microwaves, Radar and Electronic Navigation	PE		3	0	2	15	10	30	45	4	100
P4330	0701230606	Artificial Intelligence & Machine Learning	PE		3	0	2	15	10	30	45	4	100
P4331	0701230607	CMOS VLSI Design	PE		3	0	2	15	10	30	45	4	100

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4332	0701230608	IoT and Applications	PE		3	0	2	15	10	30	45	4	100
P4333	0701230609	Industrial Automation with PLC and SCADA	PE		3	0	2	15	10	30	45	4	100
P4334	0701230610	Biomedical Electronics	PE		3	0	2	15	10	30	45	4	100
<b>Total Required Credits</b>								<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Programme Elective-II (Choose any one course)</b>													
P4335	0701230611	Information Theory and Coding	PE		3	0	2	15	10	30	45	4	100
P4336	0701230612	High-Performance Computing	PE		3	0	2	15	10	30	45	4	100
P4337	0701230613	Mixed Signal Design	PE		3	0	2	15	10	30	45	4	100
P4338	0701230614	Real Time Systems	PE		3	0	2	15	10	30	45	4	100
P4339	0701230615	Building Automation	PE		3	0	2	15	10	30	45	4	100
P4340	0701230616	Quantum Electronics	PE		3	0	2	15	10	30	45	4	100
<b>Total Required Credits</b>								<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Multidisciplinary Open Elective (Choose any one course)</b>													
P5212	0701230617	Bioinformatics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5213	0701230618	Introduction to Space Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4448	0701230619	Supply Chain Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4449	0701230620	Smart Manufacturing and Introduction of Industry 5.0	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4830	0701230621	Software Testing and Quality Assurance	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4831	0701230622	Introduction to AR-VR	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4657	0701230623	GIS and Remote Sensing Analytics	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4659	0701230624	Environmental Impact Assessment	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4791	0701230625	Gen AI Tools and Techniques	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P4792	0701230626	Data Engineering and Applications	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5218	0701230627	Mobile Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5219	0701230628	Introduction to Aerial Robotics and Drone Technology	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Semester : 7</b>													
<b>Generic Core Courses</b>													
P4408	0701230701	Product Design	PC		2	0	0	0	0	50	0	2	50
T7804	0701230702	Project	PIS		0	0	8	60	40	0	0	4	100

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total	
					L	T	La b	Practical		Theory				
								CA	ESE	CA	ESE			
SMC003	0701230703	Health and Wellness *	MC		0	0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>2</b>	<b>0</b>	<b>8</b>	<b>60</b>	<b>40</b>	<b>50</b>	<b>0</b>	<b>6</b>	<b>150</b>	
<b>Generic Core Courses - Track 1</b>														
P4404	0701230704	Feedback Control Systems	PC		2	0	2	15	10	20	30	3	75	
F0004	0701230705	Flexi-Credit Course	PC		3	0	2	25	0	75	0	4	100	
P4406	0701230706	Organizational Behaviour	HSMC		1	0	0	0	0	25	0	1	25	
<b>Total Required Credits</b>								<b>40</b>	<b>10</b>	<b>120</b>	<b>30</b>	<b>8</b>	<b>200</b>	
<b>Programme Elective-I (Choose any one course)</b>														
P4387	0701230707	5G Technology	PE		3	0	2	15	10	30	45	4	100	
P5248	0701230708	Automatic Train Protection System - KAVACH	PE		3	0	2	15	10	30	45	4	100	
P4389	0701230709	Low Power VLSI Design	PE		3	0	2	15	10	30	45	4	100	
P4391	0701230710	Embedded Artificial Intelligence	PE		3	0	2	15	10	30	45	4	100	
P4392	0701230711	Autonomous Systems	PE		3	0	2	15	10	30	45	4	100	
P4393	0701230712	Electric Vehicles	PE		3	0	2	15	10	30	45	4	100	
<b>Total Required Credits</b>								<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>	

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Programme Elective-II (Choose any one course)</b>													
P4395	0701230713	Software Defined Radio	PE		3	0	2	15	10	30	45	4	100
P4397	0701230714	Computer Vision	PE		3	0	2	15	10	30	45	4	100
P4398	0701230715	FPGA Programming	PE		3	0	2	15	10	30	45	4	100
P4399	0701230716	Cyber Physical System	PE		3	0	2	15	10	30	45	4	100
P4765	0701230717	Advanced Control Systems Engineering	PE		3	0	2	15	10	30	45	4	100
P4401	0701230718	Wireless Sensor Network	PE		3	0	2	15	10	30	45	4	100
<b>Total Required Credits</b>								<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Generic Core Courses - Track 2</b>													
F0004	0701230719	Flexi-Credit Course	PC		4	0	0	0	0	100	0	4	100
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Generic Elective courses Group (Choose any one Course)</b>													
T7912	0701230720	Startup Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	0701230721	Research Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	0701230722	Industry Internship	PIS		0	0	24	180	120	0	0	12	300
<b>Total Required Credits</b>								<b>180</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>300</b>
<b>Semester : 8</b>													
<b>Generic Core Courses</b>													

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7912	0701230801	Internship	PIS		0	0	24	180	120	0	0	12	300
T7802	0701230802	Seminar	PIS		0	0	4	30	20	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>28</b>	<b>210</b>	<b>140</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>350</b>

Abbreviations (Nature)	Description
<b>BS</b>	Basic Sciences
<b>ES</b>	Engineering Sciences
<b>PC</b>	Professional Core
<b>PE</b>	Professional Elective
<b>HSMC</b>	Humanities and Social Sciences including Management
<b>MOPE</b>	Multidisciplinary Open Electives
<b>PIS</b>	Project, Internship, Seminar
<b>IKS</b>	Indian Knowledge System
<b>L</b>	Lecture
<b>MC</b>	Mandatory Course
<b>T</b>	Tutorial
<b>CA</b>	Continuous Assessment
<b>ESE</b>	End Semester Examination
<b>LAB</b>	Laboratory

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**Track 1 (T1):** For Regular Students

**Track 2 (T2):** For Students opting for Internship/ Entrepreneurship

**Definition:**

**Honours:** Students have the option to pursue an "Honours" degree by completing an additional 20 credits within their major discipline, focusing on more advanced, specialised, emerging, or multidisciplinary courses beyond the standard requirements of the B.Tech degree.

**Minors:** Students have the option to pursue a "Minor" by completing 18 credits in a discipline/ specialisation other than their major discipline beyond the standard requirements of the B.Tech. Degree.

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Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
<b>Track 1</b>				
Semester 1	8	12	20	500
Semester 2	7	13	20	500
Semester 3	8	12	20	500
Semester 4	7	13	20	500
Semester 5	3	19	22	550
Semester 6	7	15	22	550
Semester 7	7	15	22	550
Semester 8	0	14	14	350
<b>Total</b>	<b>47</b>	<b>113</b>	<b>160</b>	<b>4000</b>
<b>Track 2</b>				
Semester 1	8	12	20	500
Semester 2	7	13	20	500
Semester 3	8	12	20	500
Semester 4	7	13	20	500
Semester 5	3	19	22	550
Semester 6	7	15	22	550
Semester 7	6	16	22	550
Semester 8	0	14	14	350
<b>Total</b>	<b>46</b>	<b>114</b>	<b>160</b>	<b>4000</b>

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**Optional 'Honours' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 4</b>													
<b>Embedded Systems Specialisation Core Courses</b>													
P4766	0701230421	Microcontrollers and Embedded C Programming	PC		3	0	2	15	10	30	45	4	100
<b>Total</b>					<b>3</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Semester : 4</b>													
<b>Semiconductor Technology Specialisation Core Courses</b>													
P4767	0701230422	Introduction to Microfabrication	PC		3	0	2	15	10	30	45	4	100
<b>Total</b>					<b>3</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Semester : 5</b>													
<b>Embedded Systems Specialisation Core Courses</b>													
P4768	0701230526	Automotive Embedded Systems	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Semester : 5</b>													
<b>Semiconductor Technology Specialisation Core Courses</b>													

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**Optional 'Honours' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TEE7058	0701230527	Semiconductor Equipment Design and Technology	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Semester : 6</b>													
<b>Embedded Systems Specialisation Core Courses</b>													
P4769	0701230629	Model Based Design	PC		3	0	2	15	10	30	45	4	100
TEE7048	0701230630	Embedded Cyber Security	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>60</b>	<b>90</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Semiconductor Technology Specialisation Core Courses</b>													
P4770	0701230631	Application-Specific Integrated Circuit Design and Fabrication	PC		3	0	2	15	10	30	45	4	100
TEE7049	0701230632	Semiconductor Materials Synthesis and Characterization	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>60</b>	<b>90</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													

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**Optional 'Honours' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Embedded Systems Specialisation Core Courses</b>													
T7804	0701230723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701230724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Semiconductor Technology Specialisation Core Courses</b>													
T7804	0701230723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701230724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>

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Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
<b>Embedded Systems</b>				
Semester 4	0	4	4	100
Semester 5	0	3	3	75
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Semiconductor Technology</b>				
Semester 4	0	4	4	100
Semester 5	0	3	3	75
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>

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**Annexure C**  
**Optional 'Minor' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 3</b>													
<b>Artificial Intelligence and Machine Learning Specialisation Core Courses</b>													
P4772	0701230308	Elements of AI	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 3</b>													
<b>Cyber Security Specialisation Core Courses</b>													
P4773	0701230309	Cybersecurity Foundation	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 4</b>													
<b>Artificial Intelligence and Machine Learning Specialisation Core Courses</b>													
P4774	0701230423	Machine Learning Fundamentals	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 4</b>													
<b>Cyber Security Specialisation Core Courses</b>													
TE7017	0701230424	Network Security	PC		4	0	0	0	0	40	60	4	100

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**Optional 'Minor' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 5</b>													
<b>Artificial Intelligence and Machine Learning Specialisation Core Courses</b>													
TE7136	0701230528	Deep Learning	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 5</b>													
<b>Cyber Security Specialisation Core Courses</b>													
P4775	0701230529	Mobile Security and Forensics	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Semester : 6</b>													
<b>Artificial Intelligence and Machine Learning Specialisation Core Courses</b>													
F0003	0701230633	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
P4534	0701230634	Reinforcement Learning	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>95</b>	<b>30</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													

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**Optional 'Minor' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Cyber Security Specialisation Core Courses</b>													
F0003	0701230635	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
P4853	0701230636	Cyber Security and Artificial Intelligence	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>95</b>	<b>30</b>	<b>6</b>	<b>150</b>

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**Optional 'Minor' Specialisation**

Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
<b>Artificial Intelligence and Machine Learning</b>				
Semester 3	0	4	4	100
Semester 4	0	4	4	100
Semester 5	0	4	4	100
Semester 6	3	3	6	150
<b>Total</b>	<b>3</b>	<b>15</b>	<b>18</b>	<b>450</b>
<b>Cyber Security</b>				
Semester 3	0	4	4	100
Semester 4	0	4	4	100
Semester 5	0	4	4	100
Semester 6	3	3	6	150
<b>Total</b>	<b>3</b>	<b>15</b>	<b>18</b>	<b>450</b>