



Celebrating 50 Years of Excellence

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Electronics & Tele-Communication Engineering)**  
**Programme Structure 2022-26**

<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>			





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		<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.	<b>SELECTION PROCEDURE</b>	Merit list by a valid score of Symbiosis Entrance Test (SIT EEE) or Joint Entrance Examination (JEE - Mains) or Any States Engineering Entrance Test.
7.	<b>MEDIUM OF INSTRUCTION</b>	English
8.	<b>PROGRAMME PATTERN</b>	Semester
9.	<b>COURSE &amp; SPECIALIZATION</b>	<p>Annexure A: Bachelor of Technology (Electronics and Tele-Communication)</p> <p>Students may pursue optional 'Honours' OR 'Minor' 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 and Annexure C for Minor in the respective specialization area.</p> <p>Annexure B: Optional 'Honours' specialization area</p> <ol style="list-style-type: none"> <li>1. Bioelectronics Systems</li> <li>2. Embedded Systems</li> <li>3. Mechatronics and Automation</li> <li>4. Optoelectronics and Communication</li> <li>5. Signal Processing</li> <li>6. Sustainable Energy Devices and Systems</li> </ol> <p>Annexure C: Optional 'Minor' specialization area</p>





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		1.Artificial Intelligence and Machine learning (CSE) 2.Data Science (CSE) 3.Internet of things (CSE) 4.Smart Cities and Urban Analytics (CE) 5.Automobile engineering with hybrid and autonomous technology (ME)			
<b>10.</b>	<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
<b>Note: For additional optional specialization 'Honours' or 'Minor', an additional fees of Rs. 25000/- will be charged in the third year.</b>					
<b>11.</b>	<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.			
<b>12.</b>	<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.			
<b>13.</b>	<b>AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE</b>	Bachelor of Technology (Electronics and Tele-Communication) OR Bachelor of Technology (Electronics and Tele-Communication) with Honours in Bioelectronics Systems / Embedded Systems / Mechatronics and Automation / Optoelectronics and Communication / Signal Processing / Sustainable Energy Devices and Systems. OR Bachelor of Technology (Electronics and Tele-Communication) with Minor in Artificial Intelligence and Machine learning /Data Science / Internet of things / Smart Cities and Urban Analytics / Automobile Engineering with Hybrid and Autonomous Technology 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. CLASSIFICATION OF CREDITS**

Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	19	0	0	0	0	1*	19
2	21	0	0	0	0	1*	21
3	22	1	0	0	0	0	23
4	22	2	0	0	0	1*	24
5	18	4	0	0	3	0	25
6	13	8	0	0	3	0	24
7	10	10	0	0	0	0	20
8	14	0	0	0	0	0	14
<b>Total</b>	<b>139</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>170</b>
<b>Optional Additional Courses (Honours)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Optional Additional Courses (Minor)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Grand Total</b>							<b>190</b>

\* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Fitness for Life', 'Environmental Science' is mandatory for the award of degree.

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	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		
<b>Semester : 1</b>													
<b>Generic Core Courses</b>													
TE7680	0701230101	Mathematics-I	BS		2	1	0	0	0	30	45	3	75
TE7685	0701230102	Physics for Electronic Engineers	BS		3	0	0	0	0	30	45	3	75
TE7687	0701230103	Physics Lab	BS		0	0	2	10	15	0	0	1	25
T7383	0701230104	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701230105	Communication skills lab	HS		0	0	2	10	15	0	0	1	25
TE7288	0701230106	Programming in C	ES		3	0	0	0	0	30	45	3	75
TE7289	0701230107	Programming in C Lab	ES		0	0	2	10	15	0	0	1	25
T6873	0701230108	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
TE7787	0701230109	Introduction to Electronics and Telecommunication Engineering	ES		1	0	0	0	0	25	0	1	25
TE7767	0701230110	Computational Techniques	ES		3	0	0	0	0	75	0	3	75
TE7188	0701230111	Environmental Science *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>15</b>	<b>1</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>235</b>	<b>165</b>	<b>19</b>	<b>475</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TE7681	0701230201	Mathematics II	BS		3	1	0	0	0	40	60	4	100



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7785	0701230202	Fundamentals of Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
TE7786	0701230203	Fundamentals of Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
TE7694	0701230204	Chemistry	BS		3	0	0	0	0	30	45	3	75
TE7695	0701230205	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
TE7286	0701230206	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0701230207	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25
T7925	0701230208	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
T6732	0701230209	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
TE7772	0701230210	Data Analytics with Excel	ES		0	0	2	25	0	0	0	1	25
TE7300	0701230211	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
TH4095	0701230212	Fitness for Life *	0		0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>12</b>	<b>1</b>	<b>16</b>	<b>125</b>	<b>75</b>	<b>145</b>	<b>180</b>	<b>21</b>	<b>525</b>
<b>Semester : 3</b>													
<b>Generic Core Courses</b>													
TE7678	0701230301	Mathematical Transform Techniques	BS		2	1	0	0	0	30	45	3	75
TE7679	0701230302	Mathematical Transform Techniques Lab	BS		0	0	2	10	15	0	0	1	25



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7083	0701230303	Signals and Systems	PC		3	0	0	0	0	30	45	3	75
TE7320	0701230304	Electronic Devices and Circuits	PC		3	0	0	0	0	30	45	3	75
TE7321	0701230305	Electronic Devices and Circuits Lab	PC		0	0	2	10	15	0	0	1	25
TE7336	0701230306	Network Theory	PC		3	0	0	0	0	30	45	3	75
TE7322	0701230307	Electronic Measurements Lab	PC		0	0	2	10	15	0	0	1	25
TE7773	0701230308	Digital Circuits and Logic Design	PC		3	0	0	0	0	30	45	3	75
TE7774	0701230309	Digital Circuits and Logic Design Lab	PC		0	0	2	10	15	0	0	1	25
T2646	0701230310	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
F0002	0701230311	Flexi-Credit Course	PC		0	0	4	50	0	0	0	2	50
<b>Total</b>					<b>15</b>	<b>1</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>175</b>	<b>225</b>	<b>22</b>	<b>550</b>
<b>Generic Elective Courses Group</b>													
T6760	0701230312	Introduction to Indian Philosophy	GE		1	0	0	0	0	25	0	1	25
T6872	0701230313	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Semester : 4</b>													
<b>Generic Core Courses</b>													
TE7770	0701230401	Control Systems	PC		3	0	0	0	0	30	45	3	75
T7548	0701230402	Control Systems Lab	PC		0	0	2	10	15	0	0	1	25





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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7780	0701230403	Electromagnetic Field Theory	PC		2	1	0	0	0	30	45	3	75
TE7084	0701230404	Analog Circuit Design	PC		3	0	0	0	0	30	45	3	75
T7536	0701230405	Analog Circuit Design Lab	PC		0	0	2	10	15	0	0	1	25
TE7425	0701230406	Principles of Communication	PC		3	0	0	0	0	30	45	3	75
TE7029	0701230407	Principles of Communication Lab	PC		0	0	2	10	15	0	0	1	25
TE7691	0701230408	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
TE7692	0701230409	Statistics, Probability and Numerical Methods Lab	BS		0	0	2	10	15	0	0	1	25
F0003	0701230410	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
T4005	0701230411	Integrated Disaster Management *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>17</b>	<b>1</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>225</b>	<b>225</b>	<b>22</b>	<b>550</b>
<b>Generic Elective Courses Group</b>													
T6184	0701230412	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6186	0701230413	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6188	0701230414	Basic Spanish I	GE		2	0	0	0	0	50	0	2	50
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>2</b>	<b>50</b>
<b>Semester : 5</b>													



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Generic Core Courses</b>													
TE7777	0701230501	Digital Signal Processing	PC		3	0	0	0	0	30	45	3	75
T7559	0701230502	Digital Signal Processing Lab	PC		0	0	2	10	15	0	0	1	25
TE7086	0701230503	VLSI Design	PC		3	0	0	0	0	30	45	3	75
T7592	0701230504	VLSI Design Lab	PC		0	0	2	10	15	0	0	1	25
TE7791	0701230505	Microcontrollers and Applications	PC		3	0	0	0	0	75	0	3	75
T7576	0701230506	Microcontrollers and Applications Lab	PC		0	0	2	10	15	0	0	1	25
T6749	0701230507	Design Thinking	HS		2	0	0	0	0	50	0	2	50
T8000	0701230508	Service Learning	HS		0	0	8	100	0	0	0	4	100
<b>Total</b>					<b>11</b>	<b>0</b>	<b>14</b>	<b>130</b>	<b>45</b>	<b>185</b>	<b>90</b>	<b>18</b>	<b>450</b>
<b>Generic Elective Courses Group - I</b>													
TE7792	0701230509	Microwaves, Radar and Electronic Navigation	PE		3	0	0	0	0	30	45	3	75
TE7088	0701230510	Digital Image Processing	PE		3	0	0	0	0	30	45	3	75
TE7765	0701230511	CMOS VLSI Design	PE		3	0	0	0	0	30	45	3	75
TE7796	0701230512	Operating Systems Fundamentals	PE		3	0	0	0	0	30	45	3	75
TE7040	0701230513	Robotics and Automation	PE		3	0	0	0	0	30	45	3	75
TE7085	0701230514	Power Electronics	PE		3	0	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>Generic Elective Courses Group - II</b>													



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7793	0701230515	Microwaves, Radar and Electronic Navigation Lab	PE		0	0	2	10	15	0	0	1	25
T7094	0701230516	Digital Image Processing Lab	PE		0	0	2	10	15	0	0	1	25
TE7766	0701230517	CMOS VLSI Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7797	0701230518	Operating Systems Fundamentals Lab	PE		0	0	2	10	15	0	0	1	25
TE7041	0701230519	Robotics and Automation Lab	PE		0	0	2	10	15	0	0	1	25
T7583	0701230520	Power Electronics Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Open Elective Courses Group</b>													
TE7698	0701230521	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7676	0701230522	Executive Corporate Communication For Impact	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7195	0701230523	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701230524	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7297	0701230525	Software Testing Tools	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0701230526	Open Source Technologies	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7584	0701230527	Printed Circuit Board (PCB) Design	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0701230528	Introduction to Mechatronics	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7804	0701230529	Design Optimization Techniques	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701230530	3D Printing and Prototyping	OE	Mechanical Engineering	3	0	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>													
TE7316	0701230601	Digital Communication	PC		3	0	0	0	0	30	45	3	75
T7552	0701230602	Digital Communication Lab	PC		0	0	2	10	15	0	0	1	25
T7802	0701230603	Capstone Course	PC		2	0	0	0	0	50	0	2	50
TE7788	0701230604	IPR for Engineers	ES		1	0	0	0	0	25	0	1	25
TE7798	0701230605	Project Based Learning	PIS		0	0	4	50	0	0	0	2	50
F0004	0701230606	Flexi-Credit Course	PC		4	0	0	0	0	100	0	4	100
<b>Total</b>					<b>10</b>	<b>0</b>	<b>6</b>	<b>60</b>	<b>15</b>	<b>205</b>	<b>45</b>	<b>13</b>	<b>325</b>
<b>Generic Elective Courses Group - I</b>													
TE7090	0701230607	Antenna and Wave Propagation	PE		3	0	0	0	0	30	45	3	75



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7473	0701230608	Artificial Intelligence	PE		3	0	0	0	0	30	45	3	75
TE7783	0701230609	FPGA Design	PE		3	0	0	0	0	30	45	3	75
TE7045	0701230610	IoT and Applications	PE		3	0	0	0	0	30	45	3	75
TE7653	0701230611	PLC & SCADA	PE		3	0	0	0	0	30	45	3	75
TE7306	0701230612	Biomedical Electronics	PE		3	0	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>Generic Elective Courses Group - II</b>													
TE7091	0701230613	Antenna and Wave Propagation Lab	PE		0	0	2	10	15	0	0	1	25
TE7014	0701230614	Artificial Intelligence Lab	PE		0	0	2	10	15	0	0	1	25
TE7784	0701230615	FPGA Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7048	0701230616	IoT and Applications Lab	PE		0	0	2	10	15	0	0	1	25
TE7596	0701230617	PLC Programming Lab	PE		0	0	2	10	15	0	0	1	25
TE7307	0701230618	Biomedical Electronics Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Generic Elective Course Group III</b>													
T7908	0701230619	Computer Networks	PE		3	0	0	0	0	30	45	3	75
TE7753	0701230620	Deep Learning	PE		3	0	0	0	0	30	45	3	75
TE7794	0701230621	Mixed Signal Design	PE		3	0	0	0	0	30	45	3	75
TE7799	0701230622	Real Time Systems	PE		3	0	0	0	0	30	45	3	75



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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		
TE7089	0701230623	Modern Control Theory	PE		3	0	0	0	0	30	45	3	75
TE7768	0701230624	Consumer Electronics	PE		3	0	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>Generic Elective Course Group IV</b>													
T7482	0701230625	Computer Networks Lab	PE		0	0	2	10	15	0	0	1	25
TE7754	0701230626	Deep Learning Lab	PE		0	0	2	10	15	0	0	1	25
TE7795	0701230627	Mixed Signal Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7800	0701230628	Real Time Systems Lab	PE		0	0	2	10	15	0	0	1	25
TE7039	0701230629	Modern Control Theory Lab	PE		0	0	2	10	15	0	0	1	25
TE7769	0701230630	Consumer Electronics Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Open Elective Courses Group</b>													
TE7677	0701230631	Financial Mathematics	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7700	0701230632	Smart Materials	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7223	0701230633	Smart Urban Planning	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7240	0701230634	Water Resource Planning and Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
T7499	0701230635	Java	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75



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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		
TE7750	0701230636	Web Application Development	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7574	0701230637	MATLAB	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7428	0701230638	Introduction to Image Processing	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7810	0701230639	Industrial Revolution and Introduction of Industry 5.0	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0701230640	Six sigma	OE	Mechanical Engineering	3	0	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>													
T7804	0701230701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
T7674	0701230702	Cyber Security	PC		2	0	0	0	0	50	0	2	50
T6774	0701230703	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
F0002	0701230704	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>6</b>	<b>0</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>150</b>	<b>0</b>	<b>10</b>	<b>250</b>
<b>Generic Elective Courses Group - I</b>													



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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		
TE7762	0701230705	5G Technology	PE		3	0	0	0	0	30	45	3	75
TE7342	0701230706	Speech and Audio Signal Processing	PE		3	0	0	0	0	30	45	3	75
TE7789	0701230707	Low Power VLSI Design	PE		3	0	0	0	0	30	45	3	75
TE7781	0701230708	Embedded Artificial Intelligence	PE		3	0	0	0	0	30	45	3	75
TE7778	0701230709	Electric Vehicles	PE		3	0	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>Generic Elective Courses Group - II</b>													
TE7763	0701230710	5G Technology Lab	PE		0	0	2	10	15	0	0	1	25
TE7343	0701230711	Speech and Audio Signal Processing Lab	PE		0	0	2	10	15	0	0	1	25
TE7790	0701230712	Low Power VLSI Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7782	0701230713	Embedded Artificial Intelligence Lab	PE		0	0	2	10	15	0	0	1	25
TE7779	0701230714	Electric Vehicle Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Generic Elective Courses Group - III</b>													
TE7326	0701230715	Fiber Optics And Satellite Communication	PE		3	0	0	0	0	30	45	3	75
TE7484	0701230716	Computer Vision	PE		3	0	0	0	0	30	45	3	75
TE7775	0701230717	Digital Design Verification	PE		3	0	0	0	0	30	45	3	75
TE7618	0701230718	Cyber Physical System	PE		3	0	0	0	0	30	45	3	75
TE7832	0701230719	Building Automation	PE		3	0	0	0	0	30	45	3	75





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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		
TE7349	0701230720	Wireless Sensor Network	PE		3	0	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>Generic Elective Courses Group - IV</b>													
TE7327	0701230721	Fiber Optics And Satellite Communication Lab	PE		0	0	2	10	15	0	0	1	25
TE7485	0701230722	Computer Vision Lab	PE		0	0	2	10	15	0	0	1	25
TE7776	0701230723	Digital Design Verification Lab	PE		0	0	2	10	15	0	0	1	25
TE7771	0701230724	Cyber Physical System Lab	PE		0	0	2	10	15	0	0	1	25
TE7764	0701230725	Building Automation Lab	PE		0	0	2	10	15	0	0	1	25
TE7801	0701230726	Wireless Sensor Network Laboratory	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Generic Elective Courses Group - V</b>													
TE7438	0701230727	History of Science and Technology	GE		2	0	0	0	0	50	0	2	50
T2585	0701230728	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>2</b>	<b>50</b>
<b>Semester : 8</b>													
<b>Generic Core Courses</b>													
T7912	0701230801	Internship	PIS		0	0	24	0	0	120	180	12	300
T7802	0701230802	Seminar	PIS		0	0	4	20	30	0	0	2	50



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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		
<b>Total</b>					<b>0</b>	<b>0</b>	<b>28</b>	<b>20</b>	<b>30</b>	<b>120</b>	<b>180</b>	<b>14</b>	<b>350</b>

**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



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	5	14	19	475
Semester 2	4	17	21	525
Semester 3	4	19	23	575
Semester 4	5	19	24	600
Semester 5	9	16	25	625
Semester 6	9	15	24	600
Semester 7	8	12	20	500
Semester 8	0	14	14	350
<b>Total</b>	<b>44</b>	<b>126</b>	<b>170</b>	<b>4250</b>



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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		
<b>Semester : 5</b>													
<b>Bioelectronics Systems Specialization Core Courses</b>													
TE7333	0701230531	Introduction to Computer Vision	PC		4	0	0	0	0	40	60	4	100
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7298	0701230534	System Programming	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Mechatronics and Automation Specialization Core Courses</b>													
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50



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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		
TE7330	0701230535	Industrial Robotics	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Optoelectronics and Communication Specialization Core Courses</b>													
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7345	0701230536	Theory of Light and Lasers	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Signal Processing Specialization Core Courses</b>													
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
T7086	0701230537	Advanced Digital Signal Processing	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													



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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		
<b>Sustainable Energy Devices and Systems Specialization Core Courses</b>													
T7801	0701230532	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230533	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7344	0701230538	Sustainable Energy And Solar Photovoltaic Systems	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Bioelectronics Systems Specialization Core Courses</b>													
TE7308	0701230641	Biomedical Imaging Systems	PC		4	0	0	0	0	40	60	4	100
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7325	0701230643	Embedded Linux	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>



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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		
<b>Semester : 6</b>													
<b>Mechatronics and Automation Specialization Core Courses</b>													
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7100	0701230644	Mechatronics	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Optoelectronics and Communication Specialization Core Courses</b>													
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7337	0701230645	Optical Devices and Fiber Optics	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Signal Processing Specialization Core Courses</b>													
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7112	0701230646	VLSI Digital Signal Processing System	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>



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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		
<b>Semester : 6</b>													
<b>Sustainable Energy Devices and Systems Specialization Core Courses</b>													
T7802	0701230642	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7346	0701230647	Wind Energy Systems	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Bioelectronics Systems Specialization Core Courses</b>													
TE7050	0701230729	Biomedical Instrumentation	PC		4	0	0	0	0	40	60	4	100
TE7309	0701230730	Biomedical Instrumentation Lab	PC		0	0	2	10	15	0	0	1	25
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7304	0701230732	Advanced Microcontrollers and RTOS	PC		4	0	0	0	0	40	60	4	100
TE7305	0701230733	Advanced Microcontrollers and RTOS Lab	PC		0	0	2	10	15	0	0	1	25





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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		
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Mechatronics and Automation Specialization Core Courses</b>													
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7125	0701230734	Mobile Robotics	PC		4	0	0	0	0	40	60	4	100
TE7056	0701230735	Mobile Robotics Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Optoelectronics and Communication Specialization Core Courses</b>													
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7432	0701230736	Optical Communication Systems	PC		4	0	0	0	0	40	60	4	100
TE7433	0701230737	Optical Communication Systems Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Signal Processing Specialization Core Courses</b>													



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**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		
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7302	0701230738	Adaptive Signal Processing	PC		4	0	0	0	0	40	60	4	100
TE7303	0701230739	Adaptive Signal Processing Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Sustainable Energy Devices and Systems Specialization Core Courses</b>													
T7802	0701230731	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7313	0701230740	Devices and Grid Systems for Sustainable Energy	PC		4	0	0	0	0	40	60	4	100
TE7314	0701230741	Devices and Grid Systems for Sustainable Energy Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>4</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>40</b>	<b>60</b>	<b>7</b>	<b>175</b>



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
<b>Bioelectronics Systems</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Embedded Systems</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Mechatronics and Automation</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Optoelectronics and Communication</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Signal Processing</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150



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Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Sustainable Energy Devices and Systems</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>



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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		
<b>Semester : 5</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7273	0701230539	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701230540	Machine Learning: Regression	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Data Science Specialization Core Courses</b>													
TE7281	0701230541	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701230542	R Programming	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>105</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Internet of Things Specialization Core Courses</b>													
TE7268	0701230543	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701230544	Raspberry Pi and Python	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>105</b>	<b>7</b>	<b>175</b>



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**Optional 'Minor' 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		
<b>Semester : 5</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
TE7220	0701230545	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701230546	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701230547	IOT for Smart Cities Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>6</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>60</b>	<b>90</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology Specialization Core Courses</b>													
TE7355	0701230548	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
TE7665	0701230549	Automotive Electronics and Instrumentation	PC		2	0	0	0	0	0	50	2	50
TE7666	0701230550	Automotive Vehicle Dynamics and NVH Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>30</b>	<b>95</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7271	0701230648	Machine Learning Clustering and Retrieval	PC		3	0	0	0	0	30	45	3	75
TE7266	0701230649	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100



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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		
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>105</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Data Science Specialization Core Courses</b>													
TE7247	0701230650	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701230651	Power BI	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Internet of Things Specialization Core Courses</b>													
TE7269	0701230652	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701230653	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
T7802	0701230654	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701230655	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50



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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	Lab	CA	ESE	CA	ESE		
TE7177	0701230656	Application of Sensor Technology to Smart Cities	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>3</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b> <b>Specialization Core Courses</b>													
TE7669	0701230657	Hybrid Technology	PC		2	0	0	0	0	20	30	2	50
F0002	0701230658	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7435	0701230659	Automotive Engine and Transmission System	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Artificial Intelligence and Machine Learning</b> <b>Specialization Core Courses</b>													
T7805	0701230742	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230743	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Data Science</b> <b>Specialization Core Courses</b>													





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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		
T7805	0701230742	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230743	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Internet of Things</b>													
<b>Specialization Core Courses</b>													
T7805	0701230742	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230743	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Smart Cities and Urban Analytics</b>													
<b>Specialization Core Courses</b>													
T7803	0701230744	Specialization Project	PIS		0	0	6	30	45	0	0	3	75
<b>Total</b>					<b>0</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>75</b>
<b>Specialization Elective : Smart Cities and Urban Analytics</b>													
TE7205	0701230745	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7234	0701230746	Urban Hydrology and Hydraulics	PE		3	0	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>30</b>	<b>45</b>	<b>3</b>	<b>75</b>	



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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		
<b>Semester : 7</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
T7805	0701230742	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230743	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
<b>Artificial Intelligence and Machine Learning</b>				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Data Science</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Internet of Things</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Smart Cities and Urban Analytics</b>				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>				
Semester 5	2	4	6	150
Semester 6	2	5	7	175



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Semester 7	0	7	7	175
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>