

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Civil Engineering)**  
**Programme Structure 2022-26**

1.	<b>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>			
2.	<b>DURATION (IN MONTHS)</b>	48 (Full Time)			
3.	<b>INTAKE</b>	60			
4.	<b>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
5.	<b>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 All States Engineering Entrance Test
7.	<b>MEDIUM OF INSTRUCTION</b>	English
8.	<b>PROGRAMME PATTERN</b>	Semester
9.	<b>COURSE &amp; SPECIALISATION</b>	<p>Annexure A: Bachelor of Technology (Civil Engineering)</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. Environmental Hydraulics</li> <li>2. Geo-Environmental Engineering</li> <li>3. GIS and Surveying Technology</li> <li>4. Infrastructure Engineering and Management</li> <li>5. Smart Cities and Urban Analytics</li> <li>6. Structural Engineering</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. Embedded Systems (E&TC) 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 Specialisation '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.			

13.	<b>AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE</b>	Bachelor of Technology (Civil Engineering) OR Bachelor of Technology (Civil Engineering) with Honours in Environmental Hydraulics / Geo-Environmental Engineering / GIS and Surveying Technology / Infrastructure Engineering and Management/ Smart Cities and Urban Analytics/ Structural Engineering OR Bachelor of Technology (Civil Engineering) with Minor in Artificial Intelligence and Machine Learning / Data Science / Internet of Things / Embedded Systems / Automobile Engineering with Hybrid and Autonomous Technology as applicable 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.
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**14. CLASSIFICATION OF CREDITS**

Semester	Generic Core	Generic Elective	Specialisation Core	Specialisation Elective	Open Elective	Audit	Total
1	20	0	0	0	0	1*	20
2	23	0	0	0	0	1*	23
3	20	2	0	0	0	1*	22
4	22	1	0	0	0	0	23
5	19	2	0	0	3	0	24
6	14	7	0	0	3	0	24
7	8	12	0	0	0	0	20
8	14	0	0	0	0	1*	14
<b>Total</b>	<b>140</b>	<b>24</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>14/7</b>	<b>6/3</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>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Grand Total</b>							<b>190</b>

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

The revised programme structure supersedes the previously approved programme structure dated 09/11/2025 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.

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>													
TE7168	0701210101	Engineering Mathematics -I	BS		3	1	0	0	0	40	60	4	100
TE7732	0701210102	Programming and Logic Building Lab	ES		0	0	4	20	30	0	0	2	50
TE7683	0701210103	Physics for Civil Engineers	BS		3	0	0	0	0	30	45	3	75
TE7687	0701210104	Physics Lab	BS		0	0	2	10	15	0	0	1	25
TE7702	0701210105	Applied Mechanics	ES		3	0	0	0	0	30	45	3	75
TE7703	0701210106	Applied Mechanics Lab	ES		0	0	2	10	15	0	0	1	25
T7925	0701210107	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
T7383	0701210108	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701210109	Communication Skills Lab	HS		0	0	2	10	15	0	0	1	25
T6873	0701210110	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
TE7188	0701210111	Environmental Science *			0	0	0	0	0	0	0	Non - Letter Grade	0
<b>Total</b>					<b>12</b>	<b>1</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>145</b>	<b>180</b>	<b>20</b>	<b>500</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TE7169	0701210201	Engineering 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		
TE7694	0701210202	Chemistry	BS		3	0	0	0	0	30	45	3	75
TE7695	0701210203	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
TE7720	0701210204	Digital Land Surveying and Mapping	ES		2	0	0	0	0	20	30	2	50
TE7721	0701210205	Digital Land Surveying and Mapping Lab	ES		0	0	2	10	15	0	0	1	25
TE7729	0701210206	Introduction to Python Programming Lab	ES		0	0	4	20	30	0	0	2	50
T7957	0701210207	Building Construction Technology	PC		3	0	0	0	0	30	45	3	75
TE7706	0701210208	Basics of Sensors and Microcontrollers	ES		2	0	0	0	0	20	30	2	50
TE7707	0701210209	Basics of Sensors and Microcontrollers Lab	ES		0	0	2	10	15	0	0	1	25
TE7739	0701210210	Software Tools for Civil Engineers	ES		0	0	2	10	15	0	0	1	25
T6732	0701210211	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
TE7300	0701210212	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
TH4095	0701210213	Fitness for Life *			0	0	0	0	0	0	0	Non - Letter Grade	0
<b>Total</b>					<b>14</b>	<b>1</b>	<b>16</b>	<b>110</b>	<b>90</b>	<b>165</b>	<b>210</b>	<b>23</b>	<b>575</b>
<b>Semester : 3</b>													
<b>Generic Core Courses</b>													
TE7740	0701210301	Strength of Materials	PC		3	0	0	0	0	30	45	3	75
TE7730	0701210302	Materials Testing 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		
T7388	0701210303	Engineering Mathematics-III	BS		3	1	0	0	0	40	60	4	100
T7674	0701210304	Cyber Security	ES		2	0	0	0	0	20	30	2	50
T7966	0701210305	Advanced Surveying Lab	PC		0	0	4	50	0	0	0	2	50
TE7290	0701210306	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
TE7710	0701210307	Computer Aided Building Design and Drawing Lab	ES		0	0	4	50	0	0	0	2	50
TE7400	0701210308	Introduction to Fluid Mechanics	PC		3	0	0	0	0	30	45	3	75
TE7728	0701210309	Introduction to Fluid Mechanics Lab	PC		0	0	2	10	15	0	0	1	25
T4005	0701210310	Integrated Disaster Management *			0	0	0	0	0	0	0	Non - Letter Grade	0
<b>Total</b>					<b>11</b>	<b>1</b>	<b>16</b>	<b>170</b>	<b>30</b>	<b>120</b>	<b>180</b>	<b>20</b>	<b>500</b>
<b>Generic Elective Courses Group</b>													
T6184	0701210311	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6186	0701210312	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6188	0701210313	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 : 4</b>													
<b>Generic Core Courses</b>													

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T8000	0701210401	Service Learning	HS		0	0	8	100	0	0	0	4	100
TE7691	0701210402	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
TE7692	0701210403	Statistics, Probability and Numerical Methods Lab	BS		0	0	2	10	15	0	0	1	25
TE7711	0701210404	Computer Aided Structural Analysis-I	PC		3	0	0	0	0	30	45	3	75
T6774	0701210405	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
TE7404	0701210406	Open Channel Flow	PC		3	0	0	0	0	30	45	3	75
TE7731	0701210407	Open Channel Flow Simulation Lab	PC		0	0	2	10	15	0	0	1	25
TE7723	0701210408	Geotechnical Engineering	PC		3	0	0	0	0	30	45	3	75
TE7724	0701210409	Geotechnical Engineering Lab	PC		0	0	2	10	15	0	0	1	25
T2646	0701210410	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
<b>Total</b>					<b>15</b>	<b>0</b>	<b>14</b>	<b>130</b>	<b>45</b>	<b>195</b>	<b>180</b>	<b>22</b>	<b>550</b>
<b>Generic Elective Courses Group</b>													
T6872	0701210411	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
T6760	0701210412	Introduction to Indian Philosophy	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 : 5</b>													
<b>Generic Core Courses</b>													
TE7743	0701210501	Water Treatment and Supply System	PC		3	0	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
F7083	0701210502	Water Distribution Network Design lab	PC		0	0	2	25	0	0	0	1	25
TE7712	0701210503	Computer Aided Structural Analysis-II	PC		3	0	0	0	0	30	45	3	75
TE7714	0701210504	Design of RCC Structures	PC		3	0	0	0	0	30	45	3	75
TE7715	0701210505	Design of RCC Structures Lab	PC		0	0	2	10	15	0	0	1	25
TE7713	0701210506	Construction Project Management Lab	PC		0	0	2	10	15	0	0	1	25
T6749	0701210507	Design Thinking	HS		2	0	0	0	0	50	0	2	50
TE7291	0701210508	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
TE7199	0701210509	Hydrology and Water Resource Engineering	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>14</b>	<b>0</b>	<b>10</b>	<b>95</b>	<b>30</b>	<b>170</b>	<b>180</b>	<b>19</b>	<b>475</b>
<b>Generic Elective Courses Group</b>													
TE7704	0701210510	Artificial Intelligence and Machine Learning	PE		2	0	0	0	0	50	0	2	50
TE7727	0701210511	Internet of Things	PE		2	0	0	0	0	50	0	2	50
TE7709	0701210512	Cloud Computing and Blockchain Technology	PE		2	0	0	0	0	50	0	2	50
TE7708	0701210513	Big Data Analytics	PE		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>Open Electives Courses Group</b>													
TE7698	0701210514	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7676	0701210515	Executive Corporate Communication For Impact	OE	Applied Science	3	0	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7195	0701210516	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701210517	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7297	0701210518	Software Testing Tools	OE	Computer Science and Engineering and Information Technology	3	0	0	0	0	30	45	3	75
TE7756	0701210519	Open Source Technologies	OE	Computer Science and Engineering and Information Technology	3	0	0	0	0	30	45	3	75
T7584	0701210520	Printed Circuit Board (PCB) Design	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0701210521	Introduction to Mechatronics	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TEE7044	0701210522	Data Modelling and Analytics for Battery Energy Storage Systems	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701210523	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>													
TE7741	0701210601	Waste Water Treatment and Recycling	PC		3	0	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7742	0701210602	Water and Waste Water Analysis Lab	PC		0	0	2	10	15	0	0	1	25
TE7716	0701210603	Design of Steel Structures	PC		3	0	0	0	0	30	45	3	75
TE7717	0701210604	Design of Steel Structures Lab	PC		0	0	2	10	15	0	0	1	25
F7097	0701210605	Highway Planning Design and Construction	PC		3	0	0	0	0	75	0	3	75
T7802	0701210606	Capstone Course	PC		2	0	0	0	0	50	0	2	50
TE7726	0701210607	Highway Engineering Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>11</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>185</b>	<b>90</b>	<b>14</b>	<b>350</b>
<b>Generic Elective Courses Group - I</b>													
T7987	0701210608	Foundation Engineering	PE		4	0	0	0	0	40	60	4	100
TE7409	0701210609	Bridge Engineering	PE		4	0	0	0	0	40	60	4	100
T7975	0701210610	Green Building Technology	PE		4	0	0	0	0	40	60	4	100
TE7734	0701210611	Railway and Tunnel Engineering	PE		4	0	0	0	0	40	60	4	100
TE7412	0701210612	Introduction to Remote Sensing and GIS	PE		4	0	0	0	0	40	60	4	100
TE7221	0701210613	Smart Cities and Future Urbanism	PE		4	0	0	0	0	40	60	4	100
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>40</b>	<b>60</b>	<b>4</b>	<b>100</b>
<b>Generic Elective Courses Group - II</b>													
T7980	0701210614	Glass Facade Engineering	PE		3	0	0	0	0	30	45	3	75
TE7414	0701210615	Pavement Design	PE		3	0	0	0	0	30	45	3	75
TE7415	0701210616	Integrated Water Resource Management	PE		3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7984	0701210617	Computer Applications in Construction Management	PE		3	0	0	0	0	30	45	3	75
TE7235	0701210618	Urban Transport Engineering	PE		3	0	0	0	0	30	45	3	75
TE7416	0701210619	Smart Cities Planning and Development	PE		3	0	0	0	0	30	45	3	75
TE7175	0701210620	Advanced Structural Analysis	PE		3	0	0	0	0	30	45	3	75
TE7182	0701210621	Design of Hydraulic Structures	PE		3	0	0	0	0	30	45	3	75
TE7705	0701210622	Automation in Construction	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>Open Electives Courses Group</b>													
TE7677	0701210623	Financial Mathematics	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7700	0701210624	Smart Materials	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7223	0701210625	Smart Urban Planning	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7240	0701210626	Water Resource Planning and Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7948	0701210627	Introduction to Cloud Computing	OE	Computer Science and Engineering and Information Technology	3	0	0	0	0	30	45	3	75
TE7952	0701210628	User Interface and Experience Design	OE	Computer Science and Engineering and Information Technology	3	3	3	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
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TEE7018	0701210629	Engineering Simulation and Modeling Tools	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7428	0701210630	Introduction to Image Processing	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7810	0701210631	Industrial Revolution and Introduction of Industry 5.0	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0701210632	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>GIP</b>													
G7019	0701210655	Global Immersion Programme			0	0	0	0	0	0	475	19	475
Note: For students under Global Immersion Programme (0701210655), courses "Waste Water Treatment and Recycling" (0701210601), "Water and Waste Water Analysis Lab" (0701210602), "Highway Planning Design and Construction" (0701210605), "Capstone Course" (0701210606), "Green Building Technology" (0701210610), "Integrated Water Resource Management" (0701210616), "Water Resource Planning and Management" (0701210626) will be waived off.													
<b>GIP</b>													
G7015	0701210656	Global Immersion Programme			0	0	0	0	0	0	375	15	375

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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		
<p>Note: For students under Global Immersion Programme (0701210656), courses "Highway Planning Design and Construction" (0701210605), "Capstone Course" (0701210606), "Smart Cities and Future Urbanism" (0701210613), "Urban Transport Engineering" (0701210618), "Water Resource Planning and Management" (0701210626) will be waived off.</p>													
<b>Semester : 7</b>													
<b>Generic Core Courses</b>													
T7804	0701210701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
TE7701	0701210702	Advanced BIM Lab	PC		0	0	4	50	0	0	0	2	50
TE7733	0701210703	Project Estimation, Costing and Valuation Lab	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>16</b>	<b>110</b>	<b>90</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>200</b>
<b>Generic Elective Courses Group - I</b>													
T2585	0701210704	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
TE7438	0701210705	History of Science and Technology	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>Generic Elective Courses Group - II</b>													
TE7725	0701210706	Harbour and Airport Engineering	PE		3	0	0	0	0	30	45	3	75
TE7238	0701210707	Water and Air Quality Modelling	PE		3	0	0	0	0	30	45	3	75
TE7417	0701210708	Advanced Concrete Technology	PE		3	0	0	0	0	30	45	3	75
TE7418	0701210709	Geoinformatics Application for Emergency Response Management	PE		3	0	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		
T7955	0701210710	Professional Practices in Construction	PE		3	0	0	0	0	30	45	3	75
TE7216	0701210711	Project Management in Smart Cities	PE		3	0	0	0	0	30	45	3	75
TE7219	0701210712	Rock Mechanics	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 - III</b>													
TE7722	0701210713	Emerging Technologies in Construction	PE		3	0	0	0	0	75	0	3	75
TE7231	0701210714	Sustainable Construction Methods	PE		3	0	0	0	0	75	0	3	75
TE7419	0701210715	Introduction to Finite Element Methods	PE		3	0	0	0	0	75	0	3	75
TE7420	0701210716	Environmental Geotechniques	PE		3	0	0	0	0	75	0	3	75
TE7421	0701210717	Environmental Impact Assessment	PE		3	0	0	0	0	75	0	3	75
TE7422	0701210718	Traffic Engineering	PE		3	0	0	0	0	75	0	3	75
TE7423	0701210719	Optimization in Civil Engineering	PE		3	0	0	0	0	75	0	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>3</b>	<b>75</b>
<b>Generic Elective Courses Group - IV</b>													
TE7718	0701210720	Digital Image Processing	PE		3	0	0	0	0	30	45	3	75
TE7214	0701210721	Pre-stressed Concrete Structure	PE		3	0	0	0	0	30	45	3	75
TE7737	0701210722	Smart Transport Management	PE		3	0	0	0	0	30	45	3	75
TE7735	0701210723	Smart Solid Waste Management Systems	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>

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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>Generic Elective Courses Group - V</b>													
TE7719	0701210724	Digital Image Processing Lab	PE		0	0	2	25	0	0	0	1	25
TE7215	0701210725	Prestressed Concrete Structure Lab	PE		0	0	2	25	0	0	0	1	25
TE7738	0701210726	Smart Transport Management Lab	PE		0	0	2	25	0	0	0	1	25
TE7736	0701210727	Smart Solid Waste Management Systems Lab	PE		0	0	2	25	0	0	0	1	25
<b>Total Required Credits</b>								<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>GIP</b>													
G7002	0701210744	Global Immersion Programme			0	0	0	0	0	0	50	2	50
Note: For students under Global Immersion Programme (0701210744), course "Organizational Behaviour" (0701210704) will be waived off.													
<b>Semester : 8</b>													
<b>Generic Core Courses</b>													
T7912	0701210801	Internship	PIS		0	0	24	120	180	0	0	12	300
T7802	0701210802	Seminar	PIS		0	0	4	20	30	0	0	2	50
SMC001	0701210803	Vasudhaiva Kutumbakam *			0	0	0	0	0	0	0	Non - Letter Grade	0
<b>Total</b>					<b>0</b>	<b>0</b>	<b>28</b>	<b>140</b>	<b>210</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>350</b>

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

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	1	19	20	500
Semester 2	3	20	23	575
Semester 3	8	14	22	550
Semester 4	8	15	23	575
Semester 5	7	17	24	600
Semester 6	5	19	24	600
Semester 7	8	12	20	500
Semester 8	0	14	14	350
<b>Total</b>	<b>40</b>	<b>130</b>	<b>170</b>	<b>4250</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>Semester : 5</b>													
<b>Environmental Hydraulics Specialisation Core Courses</b>													
TE7185	0701210524	Environmental Fluid Mechanics	PC		3	0	0	0	0	30	45	3	75
TE7241	0701210525	Water Resources Field Methods	PC		3	0	0	0	0	30	45	3	75
TE7242	0701210526	Water Resources Field Methods 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>Geo-Environmental Engineering Specialisation Core Courses</b>													
TE7190	0701210527	Environmental Systems	PC		3	0	0	0	0	30	45	3	75
TE7229	0701210528	Structural Geology	PC		3	0	0	0	0	30	45	3	75
TE7230	0701210529	Structural Geology 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>GIS and Surveying Technology Specialisation Core Courses</b>													
TE7184	0701210530	Digital Image Processing in GIS	PC		3	0	0	0	0	30	45	3	75
TE7196	0701210531	Global Navigation Satellite Systems	PC		3	0	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
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7197	0701210532	Global Navigation Satellite Systems 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>Infrastructure Engineering and Management Specialisation Core Courses</b>													
TE7236	0701210533	Urban Transportation Planning	PC		3	0	0	0	0	30	45	3	75
TE7201	0701210534	Infrastructure Planning and Design	PC		3	0	0	0	0	30	45	3	75
TE7202	0701210535	Infrastructure Planning and Design 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>Smart Cities and Urban Analytics Specialisation Core Courses</b>													
TE7220	0701210536	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701210537	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701210538	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>													

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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>Structural Engineering Specialisation Core Courses</b>														
TE7213	0701210539	Prestressed Concrete	PC		3	0	0	0	0	30	45	3	75	
TE7208	0701210540	Modelling and Analysis of Uncertainty	PC		3	0	0	0	0	30	45	3	75	
TE7209	0701210541	Modelling and Analysis of Uncertainty 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 : 6</b>														
<b>Environmental Hydraulics Specialisation Core Courses</b>														
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50	
T7802	0701210634	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50	
<b>Total</b>					<b>0</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>	
<b>Specialisation Elective :Environmental Hydraulics</b>														
TE7211	0701210635	Pipeline Engineering	PE		3	0	0	0	0	30	45	3	75	
TE7218	0701210636	River Engineering	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>Semester : 6</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>Geo-Environmental Engineering Specialisation Core Courses</b>													
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701210634	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Specialisation Elective :Geo-Environmental Engineering</b>													
TE7187	0701210637	Environmental Laws and Policy	PE		3	0	0	0	0	30	45	3	75
TE7194	0701210638	Geotechnical Design	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>Semester : 6</b>													
<b>GIS and Surveying Technology Specialisation Core Courses</b>													
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701210634	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
TE7227	0701210639	Spatial Modelling and Analysis	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>													

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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>Infrastructure Engineering and Management Specialisation Core Courses</b>													
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701210634	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Specialisation Elective :Infrastructure Engineering and Management</b>													
TE7217	0701210640	Public Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7210	0701210641	Pavement Materials	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>Semester : 6</b>													
<b>Smart Cities and Urban Analytics Specialisation Core Courses</b>													
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701210634	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
TE7177	0701210642	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>													

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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>Structural Engineering Specialisation Core Courses</b>													
T7802	0701210633	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701210634	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
TE7228	0701210643	Structural Analysis by Matrix Methods	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 : 7</b>													
<b>Environmental Hydraulics Specialisation Core Courses</b>													
T7803	0701210728	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>Specialisation Elective :Environmental Hydraulics</b>													
TE7198	0701210729	Hydraulic Modelling	PE		3	0	0	0	0	30	45	3	75
TE7180	0701210730	Basics of Computational Methods	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>Semester : 7</b>													
<b>Geo-Environmental Engineering Specialisation 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		
T7803	0701210728	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>Specialisation Elective :Geo-Environmental Engineering</b>													
TE7226	0701210731	Solid and Hazardous Waste Management	PE		3	0	0	0	0	30	45	3	75
TE7186	0701210732	Environmental Geotechnology	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>Semester : 7</b>													
<b>GIS and Surveying Technology</b>													
<b>Specialisation Core Courses</b>													
T7803	0701210728	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>Specialisation Elective :GIS and Surveying Technology</b>													
TE7193	0701210733	Geoinformatics Applications in Natural Resource Management	PE		3	0	0	0	0	30	45	3	75
TE7205	0701210734	Intelligent Transportation Systems	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>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>Infrastructure Engineering and Management Specialisation Core Courses</b>													
T7803	0701210728	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>Specialisation Elective :Infrastructure Engineering and Management</b>													
TE7205	0701210734	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7233	0701210735	Transportation Economics	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>Semester : 7</b>													
<b>Smart Cities and Urban Analytics Specialisation Core Courses</b>													
T7803	0701210728	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>Specialisation Elective :Smart Cities and Urban Analytics</b>													
TE7205	0701210734	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7234	0701210736	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>3</b>	<b>75</b>
<b>Semester : 7</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>Structural Engineering Specialisation Core Courses</b>													
T7803	0701210728	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>Specialisation Elective :Structural Engineering</b>													
TE7200	0701210737	Industrial Structures	PE		3	0	0	0	0	30	45	3	75
TE7232	0701210738	System Engineering and Economics	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>

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
<b>Environmental Hydraulics</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>Geo-Environmental Engineering</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>GIS and Surveying Technology</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>Infrastructure Engineering and Management</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>Smart Cities and Urban Analytics</b>				
Semester 5	0	7	7	175
Semester 6	4	3	7	175

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Semester 7	0	6	6	150
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Structural Engineering</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>

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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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Artificial Intelligence and Machine Learning Specialisation Core Courses</b>													
TE7273	0701210542	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701210543	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 Specialisation Core Courses</b>													
TE7281	0701210544	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701210545	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 Specialisation Core Courses</b>													
TE7268	0701210546	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701210547	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' Specialisation**

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 : 5</b>													
<b>Embedded Systems</b>													
<b>Specialisation Core Courses</b>													
T7801	0701210548	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701210549	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7298	0701210550	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>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialisation Core Courses</b>													
TE7355	0701210551	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
TE7666	0701210552	Automotive Vehicle Dynamics and NVH Lab	PC		0	0	2	10	15	0	0	1	25
TE7665	0701210553	Automotive Electronics and Instrumentation	PC		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Artificial Intelligence and Machine Learning</b>													
<b>Specialisation Core Courses</b>													
TE7266	0701210644	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
TE7271	0701210645	Machine Learning Clustering and Retrieval	PC		3	0	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
								Practical		Theory			
					L	T	La b	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</b>													
<b>Specialisation Core Courses</b>													
TE7247	0701210646	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701210647	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</b>													
<b>Specialisation Core Courses</b>													
TE7269	0701210648	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701210649	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>Embedded Systems</b>													
<b>Specialisation Core Courses</b>													
T7802	0701210650	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7325	0701210651	Embedded Linux	PC		4	0	0	0	0	40	60	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
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<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>Automobile Engineering with Hybrid and Autonomous Technology</b> <b>Specialisation Core Courses</b>													
TE7669	0701210652	Hybrid Technology	PC		2	0	0	0	0	20	30	2	50
F0002	0701210653	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7435	0701210654	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>Specialisation Core Courses</b>													
T7805	0701210739	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701210740	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>Specialisation Core Courses</b>													
T7805	0701210739	Specialization Project	PIS		0	0	10	50	75	0	0	5	125

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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		
T7802	0701210740	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>Specialisation Core Courses</b>													
T7805	0701210739	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701210740	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>Embedded Systems</b>													
<b>Specialisation Core Courses</b>													
T7802	0701210741	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7304	0701210742	Advanced Microcontrollers and RTOS	PC		4	0	0	0	0	40	60	4	100
TE7305	0701210743	Advanced Microcontrollers and RTOS 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>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialisation 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
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7805	0701210739	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701210740	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>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>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>