

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Electronics and Telecommunication Engineering)
Programme Structure 2022-2026

1. OBJECTIVE	<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 & 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. DURATION (IN MONTHS)	48 (Full Time)			
3. INTAKE	120			
4. RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)
		15	7.5	3
	II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)
		2		15
5. ELIGIBILITY	<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.	SELECTION PROCEDURE	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.	MEDIUM OF INSTRUCTION	English
8.	PROGRAMME PATTERN	Semester
9.	COURSE & SPECIALISATION	<p>Annexure A: Bachelor of Technology (Electronics and Telecommunication)</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"> 1. Bioelectronics Systems 2. Embedded Systems 3. Mechatronics and Automation 4. Optoelectronics and Communication 5. Signal Processing 6. Sustainable Energy Devices and Systems <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. Security and Privacy (CSE) 5. Smart Cities and Urban Analytics (CE) 6. Automobile Engineering with Hybrid and Autonomous Technology (ME)			
10.	FEE		Academic Fee p.a	Institute Deposit	Total
		Indian Students	260000	20000	280000
		International Students (USD equivalent to INR)	390000	20000	410000
Note: For additional optional Specialisation 'Honours' or 'Minor', an additional fees of Rs. 25000/- will be charged in the third year.					
11.	ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
12.	STANDARD OF PASSING	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			

13.	AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE	Bachelor of Technology (Electronics and Telecommunication Engineering) OR Bachelor of Technology (Electronics and Telecommunication Engineering) 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 Telecommunication Engineering) with Minor in Artificial Intelligence and Machine Learning /Data Science / Internet of Things / Security and Privacy (CSE) /Smart Cities and Urban Analytics / Automobile Engineering with Hybrid and Autonomous Technology will be awarded at the end of the 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	19	0	0	0	0	1*	19
2	21	0	0	0	0	1*	21
3	21	2	0	0	0	0	23
4	23	1	0	0	0	1*	24
5	14	6	0	0	3	0	23
6	15	8	0	0	3	0	26
7	12	8	0	0	0	0	20
8	14	0	0	0	0	0	14
Total	139	25	0	0	6	0	170
Optional Additional Courses (Honours)							
Total	0	0	20	0	0	0	20
Optional Additional Courses (Minor)							
Total	0	0	20/17	0/3	0	0	20
Grand Total							190

* 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 17/11/2025 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		
Semester : 1													
Generic Core Courses													
TE7680	0701230101	Mathematics-I	BS		2	1	0	0	0	30	45	3	75
TE7685	0701230102	Physics for Electronics 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
Total					15	1	6	30	45	235	165	19	475
Semester : 2													
Generic Core Courses													
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
Total					12	1	16	125	75	145	180	21	525
Semester : 3													
Generic Core Courses													
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	
F7065	0701230310	C++ and Data Structures	PC		0	0	4	50	0	0	0	2	50	
Total					14	1	12	90	60	150	225	21	525	
Generic Elective Courses Group														
T6184	0701230311	Basic German I	GE		2	0	0	0	0	50	0	2	50	
T6186	0701230312	Basic French I	GE		2	0	0	0	0	50	0	2	50	
T6188	0701230313	Basic Spanish I	GE		2	0	0	0	0	50	0	2	50	
Total Required Credits									0	0	50	0	2	50
Semester : 4														
Generic Core Courses														
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	
TE7780	0701230403	Electromagnetic Field Theory	PC		2	1	0	0	0	30	45	3	75	

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
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
T2646	0701230408	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
T8000	0701230409	Service Learning	HS		0	0	8	100	0	0	0	4	100
F7073	0701230410	Hardware Interfacing and Sensor Integration	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
Total					15	1	14	130	45	220	180	23	575
Generic Elective Course Group													
T6760	0701230412	Introduction to Indian Philosophy	GE		1	0	0	0	0	25	0	1	25
T6872	0701230413	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
Total Required Credits								0	0	25	0	1	25
Semester : 5													
Generic Core Courses													
TE7777	0701230501	Digital Signal Processing	PC		3	0	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
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
Total					11	0	6	30	45	185	90	14	350
Generic Elective Courses Group - I (Choose Any One Course)													
TE7792	0701230508	Microwaves, Radar and Electronic Navigation	PE		3	0	0	0	0	30	45	3	75
TE7088	0701230509	Digital Image Processing	PE		3	0	0	0	0	30	45	3	75
TE7765	0701230510	CMOS VLSI Design	PE		3	0	0	0	0	30	45	3	75
TE7796	0701230511	Operating Systems Fundamentals	PE		3	0	0	0	0	30	45	3	75
TE7040	0701230512	Robotics and Automation	PE		3	0	0	0	0	30	45	3	75
TE7085	0701230513	Power Electronics	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - II (Choose Any One Course)													

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7793	0701230514	Microwaves, Radar and Electronic Navigation Lab	PE		0	0	2	10	15	0	0	1	25
T7094	0701230515	Digital Image Processing Lab	PE		0	0	2	10	15	0	0	1	25
TE7766	0701230516	CMOS VLSI Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7797	0701230517	Operating Systems Fundamentals Lab	PE		0	0	2	10	15	0	0	1	25
TE7041	0701230518	Robotics and Automation Lab	PE		0	0	2	10	15	0	0	1	25
T7583	0701230519	Power Electronics Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Open Elective Courses Group (Choose Any One Course)													
TE7698	0701230522	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7676	0701230523	Executive Corporate Communication For Impact	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7195	0701230524	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701230525	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7297	0701230526	Software Testing Tools	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0701230527	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	0701230528	Printed Circuit Board (PCB) Design	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0701230529	Introduction to Mechatronics	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TEE7044	0701230530	Data Modelling and Analytics for Battery Energy Storage Systems	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701230531	3D Printing and Prototyping	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - III (Choose Any One Course)													
TE7438	0701230520	History of Science and Technology	GE		2	0	0	0	0	50	0	2	50
T2585	0701230521	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								0	0	50	0	2	50
Semester : 6													
Generic Core Courses													
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

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
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
F7099	0701230606	Telecom Data Management and Database Engineering	PC		4	0	0	0	0	100	0	4	100
T6774	0701230607	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
Total					12	0	6	60	15	255	45	15	375
Generic Elective Courses Group - I (Choose Any One Course)													
TE7090	0701230608	Antenna and Wave Propagation	PE		3	0	0	0	0	30	45	3	75
T7473	0701230609	Artificial Intelligence	PE		3	0	0	0	0	30	45	3	75
TE7783	0701230610	FPGA Design	PE		3	0	0	0	0	30	45	3	75
TE7045	0701230611	IoT and Applications	PE		3	0	0	0	0	30	45	3	75
TE7653	0701230612	PLC and SCADA	PE		3	0	0	0	0	30	45	3	75
TE7306	0701230613	Biomedical Electronics	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - II (Choose Any One Course)													
TE7091	0701230614	Antenna and Wave Propagation Lab	PE		0	0	2	10	15	0	0	1	25
TE7014	0701230615	Artificial Intelligence Lab	PE		0	0	2	10	15	0	0	1	25

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7784	0701230616	FPGA Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7048	0701230617	IoT and Applications Lab	PE		0	0	2	10	15	0	0	1	25
TE7596	0701230618	PLC Programming Lab	PE		0	0	2	10	15	0	0	1	25
TE7307	0701230619	Biomedical Electronics Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Generic Elective Course Group III (Choose Any One Course)													
T7908	0701230620	Computer Networks	PE		3	0	0	0	0	30	45	3	75
TE7753	0701230621	Deep Learning	PE		3	0	0	0	0	30	45	3	75
TE7794	0701230622	Mixed Signal Design	PE		3	0	0	0	0	30	45	3	75
TE7799	0701230623	Real Time Systems	PE		3	0	0	0	0	30	45	3	75
TE7089	0701230624	Modern Control Theory	PE		3	0	0	0	0	30	45	3	75
TE7768	0701230625	Consumer Electronics	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Course Group IV (Choose Any One Course)													
T7482	0701230626	Computer Networks Lab	PE		0	0	2	10	15	0	0	1	25
TE7754	0701230627	Deep Learning Lab	PE		0	0	2	10	15	0	0	1	25
TE7795	0701230628	Mixed Signal Design Lab	PE		0	0	2	10	15	0	0	1	25

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7800	0701230629	Real Time Systems Lab	PE		0	0	2	10	15	0	0	1	25
TE7039	0701230630	Modern Control Theory Lab	PE		0	0	2	10	15	0	0	1	25
TE7769	0701230631	Consumer Electronics Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Open Elective Courses Group (Choose Any One Course)													
TE7677	0701230632	Financial Mathematics	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7700	0701230633	Smart Materials	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7223	0701230634	Smart Urban Planning	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7240	0701230635	Water Resource Planning and Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7948	0701230636	Introduction to Cloud Computing	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7952	0701230637	User Interface and Experience Design	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TEE7018	0701230638	Engineering Simulation and Modeling Tools	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7428	0701230639	Introduction to Image Processing	OE	Electronics and Telecommunication Engineering	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		
TE7810	0701230640	Industrial Revolution and Introduction of Industry 5.0	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0701230641	Six Sigma	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
GIP													
G7028	0701230662	Global Immersion Programme			0	0	0	0	0	0	700	28	700
Note: For students under Global Immersion Programme (0701230662), courses "Digital Communication" (0701230601),"Digital Communication Lab" (0701230602),"Capstone Course" (0701230603),"IPR for Engineers" (0701230604),"Project Based Learning" (0701230605),"Telecom Data Management and Database Engineering" (0701230606),"Principles of Economics" (0701230607),"FPGA Design" (0701230610),"FPGA Design Lab" (0701230616),"Modern Control Theory" (0701230624),"Modern Control Theory Lab" (0701230630),"Six Sigma" (0701230641),"Specialization Project" (0701230643) will be waived off.													
GIP													
G7015	0701230663	Global Immersion Programme			0	0	0	0	0	0	375	15	375
Note: For students under Global Immersion Programme (0701230663), courses "Digital Communication" (0701230601),"Digital Communication Lab" (0701230602),"FPGA Design" (0701230610),"FPGA Design Lab" (0701230616),"Mixed Signal Design" (0701230622),"Mixed Signal Design Lab" (0701230628),"Six Sigma" (0701230641) will be waived off.													
Semester : 7													
Generic Core Courses													
T7804	0701230701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
TEE7098	0701230702	Cyber Security	PC		2	0	0	0	0	50	0	2	50

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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		
TE7691	0701230703	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
TE7692	0701230704	Statistics, Probability and Numerical Methods Lab	BS		0	0	2	10	15	0	0	1	25
F7111	0701230705	Prompt Engineering	PC		2	0	0	0	0	50	0	2	50
Total					7	0	10	50	75	130	45	12	300
Generic Elective Courses Group - I (Choose Any One Course)													
TE7762	0701230706	5G Technology	PE		3	0	0	0	0	30	45	3	75
TE7342	0701230707	Speech and Audio Signal Processing	PE		3	0	0	0	0	30	45	3	75
TE7789	0701230708	Low Power VLSI Design	PE		3	0	0	0	0	30	45	3	75
TE7781	0701230709	Embedded Artificial Intelligence	PE		3	0	0	0	0	30	45	3	75
TE7778	0701230710	Electric Vehicles	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - II (Choose Any One Course)													
TE7763	0701230711	5G Technology Lab	PE		0	0	2	10	15	0	0	1	25
TE7343	0701230712	Speech and Audio Signal Processing Lab	PE		0	0	2	10	15	0	0	1	25
TE7790	0701230713	Low Power VLSI Design Lab	PE		0	0	2	10	15	0	0	1	25
TE7782	0701230714	Embedded Artificial Intelligence Lab	PE		0	0	2	10	15	0	0	1	25

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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		
TE7779	0701230715	Electric Vehicle Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								10	15	0	0	1	25
Generic Elective Courses Group - III (Choose Any One Course)													
TE7326	0701230716	Fiber Optics And Satellite Communication	PE		3	0	0	0	0	30	45	3	75
TE7484	0701230717	Computer Vision	PE		3	0	0	0	0	30	45	3	75
TE7775	0701230718	Digital Design Verification	PE		3	0	0	0	0	30	45	3	75
TE7618	0701230719	Cyber Physical System	PE		3	0	0	0	0	30	45	3	75
TE7832	0701230720	Building Automation	PE		3	0	0	0	0	30	45	3	75
TE7349	0701230721	Wireless Sensor Network	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								0	0	30	45	3	75
Generic Elective Courses Group - IV (Choose Any One Course)													
TE7327	0701230722	Fiber Optics And Satellite Communication Lab	PE		0	0	2	10	15	0	0	1	25
TE7485	0701230723	Computer Vision Lab	PE		0	0	2	10	15	0	0	1	25
TE7776	0701230724	Digital Design Verification Lab	PE		0	0	2	10	15	0	0	1	25
TE7771	0701230725	Cyber Physical System Lab	PE		0	0	2	10	15	0	0	1	25
TE7764	0701230726	Building Automation Lab	PE		0	0	2	10	15	0	0	1	25
TE7801	0701230727	Wireless Sensor Network Laboratory	PE		0	0	2	10	15	0	0	1	25

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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		
Total Required Credits					10	15	0	0	1	25			
GIP													
G7002	0701230746	Global Immersion Programme			0	0	0	0	0	0	50	2	50
Note: For students under Global Immersion Programme (0701230746), course "Cyber Security" (0701230702) will be waived off.													
Semester : 8													
Generic Core Courses													
T7912	0701230801	Internship	PIS		0	0	24	120	180	0	0	12	300
T7802	0701230802	Seminar	PIS		0	0	4	20	30	0	0	2	50
SMC001	0701230803	Vasudhaiva Kutumbakam *			0	0	0	0	0	0	0	Non - Letter Grade	0
Total					0	0	28	140	210	0	0	14	350

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	5	14	19	475
Semester 2	4	17	21	525
Semester 3	4	19	23	575
Semester 4	9	15	24	600
Semester 5	7	16	23	575
Semester 6	11	15	26	650
Semester 7	4	16	20	500
Semester 8	0	14	14	350
Total	44	126	170	4250

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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		
Semester : 5													
Bioelectronics Systems Specialisation Core Courses													
TE7333	0701230532	Introduction to Computer Vision	PC		4	0	0	0	0	40	60	4	100
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					4	0	6	30	45	40	60	7	175
Semester : 5													
Embedded Systems Specialisation Core Courses													
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7298	0701230535	System Programming	PC		4	0	0	0	0	40	60	4	100
Total					4	0	6	30	45	40	60	7	175
Semester : 5													
Mechatronics and Automation Specialisation Core Courses													
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50

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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		CA	ESE	CA			ESE
					L	T	La b	CA						
TE7330	0701230536	Industrial Robotics	PC		4	0	0	0	0	40	60	4	100	
Total					4	0	6	30	45	40	60	7	175	
Semester : 5														
Optoelectronics and Communication Specialisation Core Courses														
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25	
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50	
TE7345	0701230537	Theory of Light and Lasers	PC		4	0	0	0	0	40	60	4	100	
Total					4	0	6	30	45	40	60	7	175	
Semester : 5														
Signal Processing Specialisation Core Courses														
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25	
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50	
T7086	0701230538	Advanced Digital Signal Processing	PC		4	0	0	0	0	40	60	4	100	
Total					4	0	6	30	45	40	60	7	175	
Semester : 5														

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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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Sustainable Energy Devices and Systems Specialisation Core Courses													
T7801	0701230533	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701230534	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7344	0701230539	Sustainable Energy And Solar Photovoltaic Systems	PC		4	0	0	0	0	40	60	4	100
Total					4	0	6	30	45	40	60	7	175
Semester : 6													
Bioelectronics Systems Specialisation Core Courses													
TE7308	0701230642	Biomedical Imaging Systems	PC		4	0	0	0	0	40	60	4	100
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
Total					4	0	4	20	30	40	60	6	150
Semester : 6													
Embedded Systems Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7325	0701230644	Embedded Linux	PC		4	0	0	0	0	40	60	4	100
Total					4	0	4	20	30	40	60	6	150

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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		
Semester : 6													
Mechatronics and Automation Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7100	0701230645	Mechatronics	PC		4	0	0	0	0	40	60	4	100
Total					4	0	4	20	30	40	60	6	150
Semester : 6													
Optoelectronics and Communication Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7337	0701230646	Optical Devices and Fiber Optics	PC		4	0	0	0	0	40	60	4	100
Total					4	0	4	20	30	40	60	6	150
Semester : 6													
Signal Processing Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7112	0701230647	VLSI Digital Signal Processing System	PC		4	0	0	0	0	40	60	4	100
Total					4	0	4	20	30	40	60	6	150

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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		
Semester : 6													
Sustainable Energy Devices and Systems Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7346	0701230648	Wind Energy Systems	PC		4	0	0	0	0	40	60	4	100
Total					4	0	4	20	30	40	60	6	150
Semester : 7													
Bioelectronics Systems Specialisation Core Courses													
TE7050	0701230728	Biomedical Instrumentation	PC		4	0	0	0	0	40	60	4	100
TE7309	0701230729	Biomedical Instrumentation Lab	PC		0	0	2	10	15	0	0	1	25
T7802	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
Total					4	0	6	30	45	40	60	7	175
Semester : 7													
Embedded Systems Specialisation Core Courses													
T7802	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7304	0701230731	Advanced Microcontrollers and RTOS	PC		4	0	0	0	0	40	60	4	100
TE7305	0701230732	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	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
Total					4	0	6	30	45	40	60	7	175
Semester : 7													
Mechatronics and Automation Specialisation Core Courses													
T7802	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7125	0701230733	Mobile Robotics	PC		4	0	0	0	0	40	60	4	100
TE7056	0701230734	Mobile Robotics Lab	PC		0	0	2	10	15	0	0	1	25
Total					4	0	6	30	45	40	60	7	175
Semester : 7													
Optoelectronics and Communication Specialisation Core Courses													
T7802	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7432	0701230735	Optical Communication Systems	PC		4	0	0	0	0	40	60	4	100
TE7433	0701230736	Optical Communication Systems Lab	PC		0	0	2	10	15	0	0	1	25
Total					4	0	6	30	45	40	60	7	175
Semester : 7													
Signal Processing Specialisation Core Courses													

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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	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7302	0701230737	Adaptive Signal Processing	PC		4	0	0	0	0	40	60	4	100
TE7303	0701230738	Adaptive Signal Processing Lab	PC		0	0	2	10	15	0	0	1	25
Total					4	0	6	30	45	40	60	7	175
Semester : 7													
Sustainable Energy Devices and Systems Specialisation Core Courses													
T7802	0701230730	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7313	0701230739	Devices and Grid Systems for Sustainable Energy	PC		4	0	0	0	0	40	60	4	100
TE7314	0701230740	Devices and Grid Systems for Sustainable Energy Lab	PC		0	0	2	10	15	0	0	1	25
Total					4	0	6	30	45	40	60	7	175

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

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Semester 7	0	7	7	175
Total	0	20	20	500
Sustainable Energy Devices and Systems				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500

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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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 5													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7273	0701230540	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701230541	Machine Learning: Regression	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 5													
Data Science Specialisation Core Courses													
TE7281	0701230542	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701230543	R Programming	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 5													
Internet of Things Specialisation Core Courses													
TE7268	0701230544	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701230545	Raspberry Pi and Python	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175

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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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 5													
Security and Privacy Specialisation Core Courses													
TE7296	0701230546	Software Security	PC	Security and Privacy	3	0	0	0	0	30	45	3	75
TE7301	0701230547	Usable Security	PC	Security and Privacy	3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 5													
Smart Cities and Urban Analytics Specialisation Core Courses													
TE7220	0701230548	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701230549	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701230550	IOT for Smart Cities Lab	PC		0	0	2	10	15	0	0	1	25
Total					6	0	2	10	15	60	90	7	175
Semester : 5													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7355	0701230551	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
TE7665	0701230552	Automotive Electronics and Instrumentation	PC		2	0	0	0	0	0	50	2	50
TE7666	0701230553	Automotive Vehicle Dynamics and NVH Lab	PC		0	0	2	10	15	0	0	1	25

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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		
Total					5	0	2	10	15	30	95	6	150
Semester : 6													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7271	0701230649	Machine Learning Clustering and Retrieval	PC		3	0	0	0	0	30	45	3	75
TE7266	0701230650	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
Total					7	0	0	0	0	70	105	7	175
Semester : 6													
Data Science Specialisation Core Courses													
TE7247	0701230651	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701230652	Power BI	PC		3	0	0	0	0	30	45	3	75
Total					6	0	0	0	0	60	90	6	150
Semester : 6													
Internet of Things Specialisation Core Courses													
TE7269	0701230653	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701230654	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75

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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		
Total					6	0	0	0	0	60	90	6	150
Semester : 6													
Security and Privacy Specialisation Core Courses													
TE7252	0701230655	Cryptography	PC	Security and Privacy	4	0	0	0	0	40	60	4	100
TE7258	0701230656	Hardware Security	PC	Security and Privacy	3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	70	105	7	175
Semester : 6													
Smart Cities and Urban Analytics Specialisation Core Courses													
T7802	0701230643	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701230657	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
TE7177	0701230658	Application of Sensor Technology to Smart Cities	PC		3	0	0	0	0	30	45	3	75
Total					3	0	8	100	0	30	45	7	175
Semester : 6													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7669	0701230659	Hybrid Technology	PC		2	0	0	0	0	20	30	2	50

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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		
F0002	0701230660	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7435	0701230661	Automotive Engine and Transmission System	PC		3	0	0	0	0	30	45	3	75
Total					7	0	0	0	0	100	75	7	175
Semester : 7													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
T7805	0701230741	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230742	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Data Science Specialisation Core Courses													
T7805	0701230741	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230742	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175
Semester : 7													
Internet of Things Specialisation Core Courses													

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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		CA	ESE	CA			ESE
					L	T	La b	CA						
T7805	0701230741	Specialization Project	PIS		0	0	10	50	75	0	0	5	125	
T7802	0701230742	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50	
Total					0	0	14	70	105	0	0	7	175	
Semester : 7														
Security and Privacy Specialisation Core Courses														
T7805	0701230741	Specialization Project	PIS	Security and Privacy	0	0	10	50	75	0	0	5	125	
T7802	0701230742	Specialization Seminar	PIS	Security and Privacy	0	0	4	0	0	20	30	2	50	
Total					0	0	14	50	75	20	30	7	175	
Semester : 7														
Smart Cities and Urban Analytics Specialisation Core Courses														
T7803	0701230743	Specialization Project	PIS		0	0	6	30	45	0	0	3	75	
Total					0	0	6	30	45	0	0	3	75	
Specialisation Elective : Smart Cities and Urban Analytics (Choose Any One Course)														
TE7205	0701230744	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75	
TE7234	0701230745	Urban Hydrology and Hydraulics	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
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
Total Required Credits								0	0	30	45	3	75
Semester : 7													
Automobile Engineering with Hybrid and Autonomous Technology													
Specialisation Core Courses													
T7805	0701230741	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701230742	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					0	0	14	70	105	0	0	7	175

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Artificial Intelligence and Machine Learning				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Data Science				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Internet of Things				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Security and Privacy				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Smart Cities and Urban Analytics				
Semester 5	0	7	7	175
Semester 6	4	3	7	175

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Semester 7	0	6	6	150
Total	4	16	20	500
Automobile Engineering with Hybrid and Autonomous Technology				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
Total	4	16	20	500