Symbiosis Institute of Technology, Pune
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<table>
<tr><td>1.</td><td>OBJECTIVE</td><td colspan="4">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.
Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.
The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</td></tr>
<tr><td>2.</td><td>DURATION (IN MONTHS)</td><td colspan="4">48 (Full Time)</td></tr>
<tr><td>3.</td><td>INTAKE</td><td colspan="4">60</td></tr>
<tr><td rowspan="4">4.</td><td rowspan="4">RESERVATION</td><td rowspan="2">I.Within the sanctioned intake</td><td>a) SC
(In Percentage)</td><td>b) ST
(In Percentage)</td><td>c) Differently abled
(In Percentage)</td></tr>
<tr><td>15</td><td>7.5</td><td>3</td></tr>
<tr><td rowspan="2">II.Over and above the sanctioned intake</td><td colspan="2">a) Kashmiri Migrants
(In Seats)</td><td>b) International Students
(In Percentage)</td></tr>
<tr><td colspan="2">2</td><td>20</td></tr>
<tr><td>5.</td><td>ELIGIBILITY</td><td colspan="4">Passed 10+2 examination with Physics, Chemistry and Mathematics as compulsory subjects. Obtained at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together.
OR Passed D.Voc. Stream in the same or allied sector. (The University will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to prepare Level playing field and desired learning outcomes of the programme).
B.Tech. : Lateral Entry</td></tr>
</table>

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		Passed Minimum Three-years/ Two-year (Lateral Entry) Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) in ANY branch of Engineering and Technology. OR Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks (40% marks or equivalent grade for Scheduled Caste / Scheduled Tribes) and passed 10+2 examination with Mathematics as a subject. OR Passed B. Voc/3-year D.Voc. Stream in the same allied sector. (The Constituent will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to achieve desired learning outcomes of the programme).
6.	**SELECTION PROCEDURE**	Merit list by valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Any State Government Engineering Entrance Examination
7.	**MEDIUM OF INSTRUCTION**	English
8.	**PROGRAMME PATTERN**	Semester
9.	**COURSE & SPECIALISATION**	Annexure A: Bachelor of Technology (Mechanical Engineering) 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. Annexure B: Optional 'Honours' specialization area. 1. Automobile engineering with Hybrid and Autonomous Technology 2. CAD/CAM 3. Design of Heat Exchanger 4. Smart Manufacturing (Industry 4.0) Annexure C : Optional 'Minor' specialization area 1. Artificial Intelligence and Machine Learning (CSE) 2. Data Science (CSE) 3. Internet of Things (CSE) 4. Smart Cities and Urban Analytics (CE) 5. Embedded Systems

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		6. Mechatronics			
10.	**FEE**		**Academic Fee p.a**	**Institute Deposit**	**Total**
	Indian Students (Amount in INR)		300000	20000	320000
	International Students	**NRI/ PIO/ OCI Category (Amount in US$)**	5875	275	6150
		Foreign National Category (Amount in US$)	1300	275	1575
Note: For additional optional Specialisation 'Honours' or 'Minor', an additional fees of Rs. 25000/- will be charged in the third year.					
11.	**ASSESSMENT**	The courses will have 40% Continuous Assessment and 60% Term End [University] examination however, some courses (not more than 30% of the total programme credits) may have 100% Continuous Assessment.			
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**	Bachelor of Technology (Mechanical Engineering) OR Bachelor of Technology (Mechanical Engineering) with Honours in Automobile Engineering with Hybrid and Autonomous Technology/ CAD/CAM / Design of Heat Exchanger/Smart Manufacturing (Industry 4.0) OR Bachelor of Technology (Mechanical Engineering) with Minor in Artificial Intelligence and Machine Learning /Data Science / Internet of Things / Smart Cities and Urban Analytics /Embedded Systems, and Mechatronics will be awarded at the end of semester 8 examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.
14.	**CLASSIFICATION OF CREDITS**	

Semester	Generic Core	Generic Elective	Specialisation Core	Specialisation Elective	Open Elective	Mandatory Non-Credit Course/s	Non-Credit Audit Course/s	Total
Common								
1	20	0	0	0	0	1 *	As per the student's choice	20
2	20	0	0	0	0	0		20
3	21	2	0	0	0	1 *		23
4	24	1	0	0	0	1 *		25
5	21	0	0	0	3	1 *		24
6	20	0	0	0	3	0		23
7	13	8	0	0	0	0		21
8	14	0	0	0	0	0		14
Total	**153**	**11**	**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 non credit courses 'Health and Wellness Module I', 'Health and Wellness Module II', '*Vasudhaiva Kutumbakam*' and 'Environmental Science' is mandatory for award of degree.

The revised programme structure supersedes the previously approved programme structure dated 06/10/2025 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
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 1													
Generic Core Courses													
TE7168	0701250101	Engineering Mathematics -I	BS		3	1	0	0	0	40	60	4	100
TE7686	0701250102	Physics for Mechanical Engineers	BS		3	0	0	0	0	30	45	3	75
TE7687	0701250103	Physics Lab	BS		0	0	2	10	15	0	0	1	25
T7383	0701250104	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701250105	Communication skills lab	HS		0	0	2	10	15	0	0	1	25
TE7624	0701250106	Engineering Graphics	ES		1	0	0	0	0	25	0	1	25
T7925	0701250107	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
TE7286	0701250108	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0701250109	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25
T6873	0701250110	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
T7658	0701250111	Workshop Practice	ES		0	0	4	50	0	0	0	2	50
TE7188	0701250112	Environmental Science *			0	0	0	0	0	0	0	0	0
				Total	**12**	**1**	**14**	**100**	**75**	**160**	**165**	**20**	**500**
Semester : 2													
Generic Core Courses													
TE7169	0701250201	Engineering Mathematics -II	BS		3	1	0	0	0	40	60	4	100
TE7694	0701250202	Chemistry	BS		3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7695	0701250203	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0701250204	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0701250205	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
T7414	0701250206	Engineering Mechanics	ES		3	0	0	0	0	30	45	3	75
T7415	0701250207	Engineering Mechanics Lab	ES		0	0	2	10	15	0	0	1	25
TEE7003	0701250208	Software Tools For Mechanical Engineering	ES		0	0	2	25	0	0	0	1	25
TE7300	0701250209	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
T6732	0701250210	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
				Total	**13**	**1**	**12**	**105**	**45**	**155**	**195**	**20**	**500**
Semester : 3													
Generic Core Courses													
TE7170	0701250301	Engineering Mathematics-III	BS		2	1	0	0	0	30	45	3	75
TE7390	0701250302	Strength of Materials	PC		3	0	0	0	0	30	45	3	75
TEE7193	0701250303	Strength of Materials Lab	PC		0	0	2	10	15	0	0	1	25
TE7367	0701250304	Engineering Materials and Metallurgy	PC		3	0	0	0	0	30	45	3	75
TEE7192	0701250305	Measurement and Metrology Lab	PC		0	0	4	20	30	0	0	2	50
TEE7188	0701250306	Kinematics of Machines	PC		3	0	0	0	0	30	45	3	75
TEE7189	0701250307	Kinematics of Machines Lab	PC		0	0	2	10	15	0	0	1	25

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7185	0701250308	Engineering Thermodynamics	PC		3	0	0	0	0	30	45	3	75
T7940	0701250309	Engineering Thermodynamics Lab	PC		0	0	2	10	15	0	0	1	25
T2646	0701250310	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
TH4788	0701250311	Health and Wellness Module I *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**15**	**1**	**10**	**50**	**75**	**175**	**225**	**21**	**525**
Generic Elective Course Group (Choose any one Course)													
T6184	0701250312	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6186	0701250313	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6188	0701250314	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													
T8000	0701250401	Service Learning	HS		0	0	8	100	0	0	0	4	100
TE7691	0701250402	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
TE7370	0701250403	Fluid Mechanics	PC		3	0	0	0	0	30	45	3	75
T7615	0701250404	Fluid Mechanics Lab	PC		0	0	2	10	15	0	0	1	25

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7180	0701250405	Dynamics of Machines	PC		3	0	0	0	0	30	45	3	75
TEE7181	0701250406	Dynamics of Machines Lab	PC		0	0	2	10	15	0	0	1	25
TE7372	0701250407	Heat Transfer	PC		3	0	0	0	0	30	45	3	75
T7619	0701250408	Heat Transfer Lab	PC		0	0	2	10	15	0	0	1	25
TEE7407	0701250409	Mechatronics	PC		1	0	0	0	0	25	0	1	25
TEE7408	0701250410	Mechatronics Lab	PC		0	0	2	10	15	0	0	1	25
TEE7403	0701250411	Hydraulic and Pneumatic Systems	PC		2	0	0	0	0	50	0	2	50
TEE7404	0701250412	Hydraulic and Pneumatic Systems Lab	PC		0	0	2	10	15	0	0	1	25
TEE7401	0701250413	Total Productive Maintenance	PC		0	0	2	10	15	0	0	1	25
TH4789	0701250414	Health and Wellness Module II *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**15**	**0**	**20**	**160**	**90**	**195**	**180**	**25**	**625**
				GIP									
GA7017	0701250415	Global Immersion Programme - Academic			0	0	0	0	0	0	425	17	425

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Note: For students under Global Immersion Programme - Academic (0701250415), courses "Statistics, Probability and Numerical Methods" (0701250402),"Fluid Mechanics Lab" (0701250404),"Dynamics of Machines" (0701250405),"Dynamics of Machines Lab" (0701250406),"Heat Transfer" (0701250407),"Heat Transfer Lab" (0701250408),"Mechatronics" (0701250409),"Mechatronics Lab" (0701250410),"Hydraulic and Pneumatic Systems" (0701250411),"Hydraulic and Pneumatic Systems Lab" (0701250412) will be waived off.												
GIP													
GA7014	0701250416	Global Immersion Programme - Academic			0	0	0	0	0	0	350	14	350
Note: For students under Global Immersion Programme - Academic (0701250416), courses "Fluid Mechanics" (0701250403),"Fluid Mechanics Lab" (0701250404),"Heat Transfer" (0701250407),"Heat Transfer Lab" (0701250408),"Mechatronics" (0701250409),"Mechatronics Lab" (0701250410),"Hydraulic and Pneumatic Systems" (0701250411),"Hydraulic and Pneumatic Systems Lab" (0701250412),"Total Productive Maintenance" (0701250413) will be waived off.													
GIP													
GA7009	0701250417	Global Immersion Programme - Academic			0	0	0	0	0	0	225	9	225
Note: For students under Global Immersion Programme - Academic (0701250417), courses "Statistics, Probability and Numerical Methods" (0701250402),"Fluid Mechanics" (0701250403),"Fluid Mechanics Lab" (0701250404),"Hydraulic and Pneumatic Systems Lab" (0701250412),"Total Productive Maintenance" (0701250413) will be waived off.													
Semester : 5													
Generic Core Courses													
TEE7186	0701250501	Fundamentals of Machine Design	PC		3	0	0	0	0	30	45	3	75
TE7806	0701250502	IC Engine and E-Mobility	PC		3	0	0	0	0	30	45	3	75
TE7807	0701250503	I.C. Engines and E-Mobility Lab	PC		0	0	2	10	15	0	0	1	25
T6749	0701250504	Design Thinking	HS		2	0	0	0	0	50	0	2	50
TE7290	0701250505	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7399	0701250506	Programmable Logic Controller and Human Machine Interface	PC		2	0	0	0	0	50	0	2	50
TEE7400	0701250507	Programmable Logic Controller and Human Machine Interface Lab	PC		0	0	4	20	30	0	0	2	50
TEE7397	0701250508	Servo Motors and Drives	PC		1	0	0	0	0	25	0	1	25
TEE7398	0701250509	Servo Motors and Drives Lab	PC		0	0	2	10	15	0	0	1	25
TEE7395	0701250510	Process Control and Instrumentation	PC		2	0	0	0	0	50	0	2	50
TEE7396	0701250511	Process Control and Instrumentation Lab	PC		0	0	4	20	30	0	0	2	50
SMC001	0701250549	*Vasudhaiva Kutumbakam* *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**13**	**0**	**16**	**110**	**90**	**235**	**90**	**21**	**525**
Open Elective Courses Group (Choose any one Course)													
TE7698	0701250512	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7676	0701250513	Executive Corporate Communication For Impact	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7195	0701250514	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701250515	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7297	0701250516	Software Testing Tools	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0701250517	Open Source Technologies	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7584	0701250518	Printed Circuit Board (PCB) Design	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0701250519	Introduction to Mechatronics	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701250520	3D Printing and Prototyping	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TEE7044	0701250521	Data Modelling and Analytics for Battery Energy Storage Systems	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 6													
Generic Core Courses													
TEE7179	0701250601	Design of Machine Elements	PC		3	0	0	0	0	30	45	3	75
TE7291	0701250602	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
TEE7388	0701250603	Industrial Internet of Things	PC		2	0	0	0	0	50	0	2	50
TEE7389	0701250604	Industrial Internet of Things Lab	PC		0	0	4	20	30	0	0	2	50
TEE7386	0701250605	AI for Manufacturing	PC		2	0	0	0	0	50	0	2	50

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7387	0701250606	AI for Manufacturing Lab	PC		0	0	4	20	30	0	0	2	50
TEE7385	0701250607	Applied ARVR	PC		0	0	2	10	15	0	0	1	25
TEE7383	0701250608	Manufacturing Systems	PC		2	0	0	0	0	50	0	2	50
TEE7384	0701250609	Manufacturing Systems Lab	PC		0	0	4	20	30	0	0	2	50
T7802	0701250610	Capstone Course	PC		2	0	0	0	0	50	0	2	50
				Total	**11**	**0**	**18**	**120**	**105**	**230**	**45**	**20**	**500**
Open Elective Courses Group (Choose any one course)													
Open Electives Courses Group													
TE7677	0701250614	Financial Mathematics	OE		3	0	0	0	0	30	45	3	75
TE7700	0701250615	Smart Materials	OE		3	0	0	0	0	30	45	3	75
TE7223	0701250616	Smart Urban Planning	OE		3	0	0	0	0	30	45	3	75
TE7240	0701250617	Water Resource Planning and Management	OE		3	0	0	0	0	30	45	3	75
TE7948	0701250618	Introduction to Cloud Computing	OE		3	0	0	0	0	30	45	3	75
TE7428	0701250621	Introduction to Image Processing	OE		3	0	0	0	0	30	45	3	75
TE7810	0701250622	Industrial Revolution and Introduction of Industry 5.0	OE		3	0	0	0	0	30	45	3	75
T7650	0701250623	Six Sigma	OE		3	0	0	0	0	30	45	3	75
TE7810	0701250619	Industrial Revolution and Introduction of Industry 5.0	OE		3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T7650	0701250620	Six Sigma	OE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 7													
Generic Core Courses													
T7804	0701250701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
TE7081	0701250702	Refrigeration and Airconditioning	PC		3	0	0	0	0	30	45	3	75
T7649	0701250703	Refrigeration and Airconditioning Lab	PC		0	0	2	10	15	0	0	1	25
TEE7098	0701250704	Cyber Security	ES		2	0	0	0	0	50	0	2	50
TE7369	0701250705	Finite Element Methods	PC		3	0	0	0	0	75	0	3	75
Total					**8**	**0**	**10**	**50**	**75**	**155**	**45**	**13**	**325**
Generic Elective Courses Group I (Choose any one Course)													
TE7637	0701250706	Additive manufacturing	GE		2	0	0	0	0	20	30	2	50
TE7649	0701250707	CFD Simulation for heat exchanger	GE		2	0	0	0	0	20	30	2	50
Total Required Credits								**0**	**0**	**20**	**30**	**2**	**50**
Generic Elective Courses - Group II (Choose Any One Group A to C)													
T7639	0701250708	Mechanical Vibration	PE		3	0	0	0	0	30	45	3	75
TE7064	0701250709	Mechanical Vibrations Lab	PE		0	0	2	10	15	0	0	1	25
Generic Elective Courses Group - B													

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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
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7182	0701250710	Electric Vehicles	PE		3	0	0	0	0	30	45	3	75
TEE7183	0701250711	Electric Vehicles Lab	PE		0	0	2	10	15	0	0	1	25
Generic Elective Courses Group - C													
TE7373	0701250712	Industrial Fluid Power	PE		3	0	0	0	0	30	45	3	75
TEE7187	0701250713	Industrial Fluid Power Lab	PE		0	0	2	10	15	0	0	1	25
Generic Elective Courses Group III (Choose any one Course)													
T2585	0701250714	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
TE7438	0701250715	History of Science and Technology	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								**0**	**0**	**50**	**0**	**2**	**50**
Semester : 8													
Generic Core Courses													
T7912	0701250801	Internship	PIS		0	0	24	120	180	0	0	12	300
T7802	0701250802	Seminar	PIS		0	0	4	20	30	0	0	2	50
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	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Semester 1	4	16	20	500
Semester 2	4	16	20	500
Semester 3	3	20	23	575
Semester 4	7	18	25	625
Semester 5	9	15	24	600
Semester 6	10	13	23	575
Semester 7	7	14	21	525
Semester 8	0	14	14	350
Total	**44**	**126**	**170**	**4250**

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Annexure B
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	Lab	CA	ESE	CA	ESE		
Semester : 5													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7355	0701250522	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
TE7665	0701250523	Automotive Electronics and Instrumentation	PC		2	0	0	0	0	50	0	2	50
TE7666	0701250524	Automotive Vehicle Dynamics and NVH Lab	PC		0	0	2	10	15	0	0	1	25
				Total	**5**	**0**	**2**	**10**	**15**	**80**	**45**	**6**	**150**
Semester : 5													
CAD/CAM Specialisation Core Courses													
T7667	0701250525	Computer Aided Design Lab	PC		0	0	4	20	30	0	0	2	50
TEE7194	0701250526	Structural Non-Linear and 3D Analysis	PC		2	0	0	0	0	50	0	2	50
TEE7002	0701250527	Structural Non Linear and 3D Analysis Lab	PC		0	0	4	20	30	0	0	2	50
				Total	**2**	**0**	**8**	**40**	**60**	**50**	**0**	**6**	**150**
Semester : 5													
Design of Heat Exchanger Specialisation Core Courses													
TE7381	0701250528	Materials and Fabrication Processes for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75

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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	Lab	CA	ESE	CA	ESE		
F0002	0701250529	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7667	0701250530	Heat Exchanger Simulation Lab 1	PC		0	0	2	10	15	0	0	1	25
		Total			**5**	**0**	**2**	**10**	**15**	**80**	**45**	**6**	**150**
Semester : 5													
Smart Manufacturing (Industry 4.0) Specialisation Core Courses													
F0002	0701250531	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7668	0701250532	Modern Sensors and Actuators	PC		3	0	0	0	0	30	45	3	75
TE7673	0701250533	Sensors and Actuators Lab	PC		0	0	2	10	15	0	0	1	25
		Total			**5**	**0**	**2**	**10**	**15**	**80**	**45**	**6**	**150**
Semester : 6													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7435	0701250621	Automotive Engine and Transmission System	PC		3	0	0	0	0	30	45	3	75
TE7669	0701250622	Hybrid Technology	PC		2	0	0	0	0	20	30	2	50
F0002	0701250623	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
		Total			**7**	**0**	**0**	**0**	**0**	**100**	**75**	**7**	**175**
Semester : 6													

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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	Lab	CA	ESE	CA	ESE		
CAD/CAM Specialisation Core Courses													
F0003	0701250624	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
TE7670	0701250625	Computer Aided Manufacturing Lab	PC		0	0	4	20	30	0	0	2	50
TE7963	0701250626	Structural Dynamics and Non Linear Analysis Lab	PC		0	0	4	20	30	0	0	2	50
		Total			**3**	**0**	**8**	**40**	**60**	**75**	**0**	**7**	**175**
Semester : 6													
Design of Heat Exchanger Specialisation Core Courses													
TE7384	0701250627	Numerical Methods for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75
TE7649	0701250628	CFD Simulation for heat exchanger	PC		2	0	0	0	0	50	0	2	50
TE7671	0701250629	Heat Exchanger Simulation Lab-2	PC		0	0	4	20	30	0	0	2	50
		Total			**5**	**0**	**4**	**20**	**30**	**80**	**45**	**7**	**175**
Semester : 6													
Smart Manufacturing (Industry 4.0) Specialisation Core Courses													
TE7672	0701250630	AI and ML for Smart Manufacturing	PC		3	0	0	0	0	30	45	3	75
TE7374	0701250631	Industrial Internet of Things	PC		2	0	0	0	0	20	30	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			
					L	T	Lab	CA	ESE	CA	ESE		
TE7573	0701250632	Machine Learning and Artificial Intelligence Lab	PC		0	0	4	20	30	0	0	2	50
Total					**5**	**0**	**4**	**20**	**30**	**50**	**75**	**7**	**175**
Semester : 7													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250717	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
CAD/CAM Specialisation Core Courses													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250717	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
Total					**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Design of Heat Exchanger Specialisation Core Courses													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125

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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	Lab	CA	ESE	CA	ESE		
T7802	0701250717	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
				Total	**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Smart Manufacturing (Industry 4.0) Specialisation Core Courses													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250717	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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Optional 'Honours' Specialisation

Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
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**
CAD/CAM				
Semester 5	2	4	6	150
Semester 6	3	4	7	175
Semester 7	0	7	7	175
Total	**5**	**15**	**20**	**500**
Design of Heat Exchanger				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
Total	**4**	**16**	**20**	**500**
Smart Manufacturing (Industry 4.0)				
Semester 5	2	4	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	**2**	**18**	**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
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 5													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7273	0701250534	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701250535	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	0701250536	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701250537	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	0701250538	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701250539	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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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	Lab	CA	ESE	CA	ESE		
Semester : 5													
Smart Cities and Urban Analytics Specialisation Core Courses													
TE7220	0701250540	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701250541	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701250542	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													
Embedded Systems Specialisation Core Courses													
TEE7047	0701250543	Microcontrollers and Embedded C Programming	PC		3	0	0	0	0	30	45	3	75
TEE7046	0701250544	Microcontrollers and Embedded C Programming Lab	PC		0	0	2	10	15	0	0	1	25
TE7991	0701250545	Automotive Embedded System	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 5													
Mechatronics Specialisation Core Courses													

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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	Lab	CA	ESE	CA	ESE		
T7816	0701250546	Automation and Robotics	PC		3	0	0	0	0	30	45	3	75
T7810	0701250547	Automation and Robotics Lab	PC		0	0	2	10	15	0	0	1	25
T7640	0701250548	Mechatronics	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 6													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7266	0701250633	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
TE7271	0701250634	Machine Learning Clustering and Retrieval	PC		3	0	0	0	0	30	45	3	75
				Total	**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester : 6													
Data Science Specialisation Core Courses													
TE7247	0701250635	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701250636	Power BI	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 6													

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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	Lab	CA	ESE	CA	ESE		
Internet of Things Specialisation Core Courses													
TE7269	0701250637	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701250638	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75
		Total			**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 6													
Smart Cities and Urban Analytics Specialisation Core Courses													
TE7177	0701250639	Application of Sensor Technology to Smart Cities	PC		3	0	0	0	0	30	45	3	75
T7802	0701250640	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701250641	Specialization Seminar	PC		0	0	4	50	0	0	0	2	50
		Total			**3**	**0**	**8**	**100**	**0**	**30**	**45**	**7**	**175**
Semester : 6													
Embedded Systems Specialisation Core Courses													
TEE7042	0701250642	Model Based Design	PC		3	0	0	0	0	30	45	3	75
TEE7040	0701250643	Model Based Design Laboratory	PC		0	0	2	10	15	0	0	1	25
TEE7048	0701250644	Embedded Cyber Security	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	Lab	CA	ESE	CA	ESE		
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 6													
Mechatronics Specialisation Core Courses													
TEE7051	0701250645	Process Control	PC		3	0	0	0	0	30	45	3	75
TEE7050	0701250646	Process Control Lab	PC		0	0	2	10	15	0	0	1	25
TE7848	0701250647	Industrial Internet of Things	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 7													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250717	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	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125

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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	Lab	CA	ESE	CA	ESE		
T7802	0701250717	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													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250717	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
				Total	**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Smart Cities and Urban Analytics Specialisation Core Courses													
T7803	0701250718	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													
TE7205	0701250719	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7234	0701250720	Urban Hydrology and Hydraulics	PE		3	0	0	0	0	30	45	3	75
				Total Required Credits				**0**	**0**	**30**	**45**	**3**	**75**
Semester : 7													

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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	Lab	CA	ESE	CA	ESE		
Embedded Systems Specialisation Core Courses													
T7802	0701250721	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7804	0701250722	Specialization Seminar	PIS		0	0	8	40	60	0	0	4	100
		Total			**0**	**0**	**12**	**60**	**90**	**0**	**0**	**6**	**150**
Semester : 7													
Mechatronics Specialisation Core Courses													
T7802	0701250721	Specialization Project	PIS	Mechatronics	0	0	4	0	0	20	30	2	50
T7804	0701250722	Specialization Seminar	PIS	Mechatronics	0	0	8	0	0	40	60	4	100
		Total			**0**	**0**	**12**	**0**	**0**	**60**	**90**	**6**	**150**

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Semester	Continuous Assessment	Term End Examination	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**
Smart Cities and Urban Analytics				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	**4**	**16**	**20**	**500**
Embedded Systems				
Semester 5	0	7	7	175
Semester 6	0	7	7	175

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Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**
Mechatronics				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**