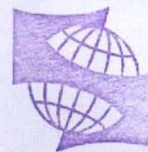
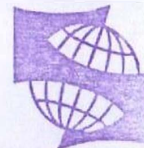


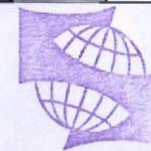
Institute Code	Institute Name	Program Code	Program Name	Catalog Course Code	Catalog Course Name	Course Type	Batch 2020	Batch 2021	Change in TC Code Yes / No	Change in course/Nature	Change in Pedagogy	Change in evaluation	Change in instruction method	Add on course	Changes Yes: Revised No: Not Revised
701	SIT, Pune	70125	B.Tech.	GEN002	Project	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	GEN003	Internship	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	GEN005	Non Catalog Courses	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T2228	Business Analytics	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T2573	Organizational Behaviour	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T2585	Organizational Behaviour	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T2618	Project Management	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T2646	Entrepreneurship Venture	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T3276	Digital Electronics	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T4005	Integrated Disaster	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6184	Basic German I	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6186	Basic French I	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6188	Basic Spanish I	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6732	Critical Thinking	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6749	Design Thinking	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6760	Introduction to Indian	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6761	Foundation of Ethics	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T6773	Creative Thinking	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T6774	Principles of Economics	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T6872	Foundation of Ethics	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	T6873	Creative Thinking	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	T7020	Nanotechnology	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech. (Mechanic	T7125	Computer Aided Manufacturing Lab	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T7381	Chemistry	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7382	Chemistry Lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7383	Communication Skills	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7384	Communication skills lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7391	Physics	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7392	Physics lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7393	Computer based Statistical	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7394	Smart Materials	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T7414	Engineering Mechanics	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7474	Basics of Database	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7499	Java	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7509	Open Source Technologies	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	T7529	Machine Learning	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7540	Basic Electrical and	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	T7574	MATLAB	Elective	Base PS	No	No						No Change



701	SIT, Pune	70125	B.Tech.	T7584	Printed Circuit Board (PCB)	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7593	Basic Electrical and	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7602	Automobile Engineering	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7607	CAD& CAM Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7611	Finite Element Methods Lab	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7612	Fluid Machinery	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7613	Fluid Machinery Lab	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7615	Fluid Mechanics Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7616	Fundamentals of Automotive	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7619	Heat Transfer Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7620	I.C. Engines	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7621	I.C. Engines Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7625	Machine Design – I	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7632	Manufacturing Technology	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7633	Manufacturing Technology	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7635	Measurement and Metrology	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7636	Measurement and Metrology	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7639	Mechanical Vibration	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7642	Non Conventional Energy	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7644	Operations Research	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7647	Production Management	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7649	Refrigeration &	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7650	Six Sigma	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7652	Strength of Materials Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7653	Theory of Machines –II	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7654	Theory of Machines –II Lab	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7656	Theory of Machines-I Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7658	Workshop Practice	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7674	Cyber Security	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7676	Total Quality Management	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7686	Computational Fluid Dynamic	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7700	Theory of Machines - I	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7801	Advanced Digital	Core		Added	Yes						Yes	Added
701	SIT, Pune	70125	B.Tech.	T7802	Electronics for smart cities	Core		Added	Yes						Yes	Added
701	SIT, Pune	70125	B.Tech.	T7805	Green Electronics	Core		Added	Yes						Yes	Added
701	SIT, Pune	70125	B.Tech.	T7925	Engineering Graphics Lab	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7928	Automotive Engineering Lab	Core	Base PS	Dropped	Yes	Yes						Dropped
701	SIT, Pune	70125	B.Tech.	T7940	Engineering Thermodynamics	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	T7960	Statistics, Probability and	Core	Base PS	Dropped	Yes	Yes						Dropped
701	SIT, Pune	70125	B.Tech.	T7961	Statistics, Probability and	Core	Base PS	Dropped	Yes	Yes						Dropped
701	SIT, Pune	70125	B.Tech.	TE7063	Jigs and Fixtures Lab	Elective	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	TE7081	Refrigeration and	Core	Base PS	No	No							No Change
701	SIT, Pune	70125	B.Tech.	TE7143	Advanced Finite Element	Core	Base PS	Dropped	Yes	Yes						Dropped
701	SIT, Pune	70125	B.Tech.	TE7168	Engineering Mathematics -I	Core	Base PS	No	No							No Change



701	SIT, Pune	70125	B.Tech.	TE7169	Engineering Mathematics -II	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7170	Engineering Mathematics-III	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7171	Introduction to Mathematical	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7177	Application of Sensor	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7188	Environmental Science	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7195	GIS Applications	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7203	Intelligent Transportation	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7204	Intelligent Transportation	Elective	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7205	Intelligent Transportation	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7206	IOT for Smart Cities	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7207	IOT for Smart Cities Lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7220	Smart Cities : Context Policy	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7223	Smart Urban Planning	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7234	Urban Hydrology and	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7240	Water Resource Planning and	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7247	Business Analytics	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7262	Internet Of Things Lab	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7263	Introduction to AI and	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7264	Introduction to BIGDATA	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7265	Introduction to Data Science	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7266	Introduction to Deep Learning	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7268	Introduction to IOT	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7269	IOT Security and Privacy	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7271	Machine Learning Clustering	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7273	Machine Learning:	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7274	Machine Learning: Regression	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7281	Open Source Tools for Data	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7284	Power BI	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7286	Programming and Problem	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7287	Programming and Problem	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7290	Project Based Learning -I	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7291	Project Based Learning-II	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7292	R Programming	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7293	Raspberry Pi and Python	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7295	Software Defined Networking	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7298	System Programming	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7300	Tinker Lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7304	Advanced Microcontrollers	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7305	Advanced Microcontrollers	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7319	Electrical and Electronics	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7325	Embedded Linux	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7334	Introduction to Mechatronics	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7335	Introduction to Robotics	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7338	Principles of Modern	Elective	Base PS	No	No						No Change



701	SIT, Pune	70125	B.Tech.	TE7339	Renewable Energy Systems	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7349	Wireless Sensor Network	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7351	3D Printing and Prototyping	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7352	Advanced Fluid Mechanics	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7355	Basics of Automotive	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7356	Basics of Heat Exchanger	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7357	CAD & CAM	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7359	Composite Materials	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7360	Computational Fluid	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7362	Computer Aided Design II Lab	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7363	Computer, System,	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7364	Digital Signal Processing	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7366	Engineering Design	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7367	Engineering Materials and	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7368	Engineering Thermodynamics	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7369	Finite Element Methods	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7370	Fluid Mechanics	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7371	Heat Exchanger Simulation	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7372	Heat Transfer	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7373	Industrial Fluid Power	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7374	Industrial Internet of Things	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7375	Instrumentation and	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7376	Introduction to Operations	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7377	Introduction to Optimisation	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7378	Jigs and Fixtures	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7379	Machine Design II	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7380	Manufacturing Engineering	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7381	Materials and Fabrication	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7382	Microcontrollers and	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7383	Nature Inspired Optimization	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7384	Numerical Methods for Heat	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7385	Power Plant Engineering	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7386	Production Management Lab	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7387	Project Management	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7388	Quality Management	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7389	Sensors and Transducers	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7390	Strength of Materials	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7391	Structural Dynamic Analysis	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7392	Structural Non Linear and 3D	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7393	Tool Engineering	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7395	Vehicle Dynamics and NVH	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7396	Software Tools	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7428	Introduction to Image	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7434	Basic and Advanced CATIA	Core	Base PS	No	No						No Change



701	SIT, Pune	70125	B.Tech.	TE7435	Automotive Engine and	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7436	Industrial Robotics	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7437	Automotive Safety	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7438	History of Science and	Elective	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7573	Machine Learning and	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7580	Vehicle Dynamics and NVH	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7582	Structural Dynamics and Non	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7602	Basics of CAM and CNC	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7616	Artificial Intelligence and	Core	Base PS	Dropped	Yes	Yes					Dropped
701	SIT, Pune	70125	B.Tech.	TE7649	CFD Simulation for heat	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TE7664	Structural Non Linear and 3D	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7665	Automotive Electronics and	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7666	Automotive Vehicle Dynamics	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7667	Heat Exchanger Simulation	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7668	Modern Sensors and	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7669	Hybrid Technology	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7670	Computer Aided	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7671	Heat Exchanger Simulation	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7672	AI and ML for Smart	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7673	Sensors and Actuators Lab	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7691	TE7691	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7692	TE7692	Core		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7698	TE7698	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7700	TE7700	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TE7756	TE7756	Elective		Added	Yes					Yes	Added
701	SIT, Pune	70125	B.Tech.	TH4095	Smart Fitness for Life	Core	Base PS	No	No						No Change
701	SIT, Pune	70125	B.Tech.	TH4272	Certificate in COVID-	Core		Added	Yes					Yes	Added



# SYMBIOSIS INSTITUTE OF TECHNOLOGY

## Symbiosis International (Deemed University)

(Established under section 3 of the UGC Act. 1956)

Re-accredited by NAAC with 'A' grade (3.58/4) | Awarded Category - I by UGC

Founder: Prof. Dr. S. B. Mujumdar, M. Sc., Ph. D. (Awarded Padma Bhushan and Padma Shri by President of India)



Celebrating 50 Years of Excellence

Percentage of Programmes in which Syllabus Revision was carried out  
from AY 2020-21 to 2021-22

**Name of the Institute:** Symbiosis Institute of Technology, Pune

**Name of the Programme:** B. Tech. (Mechanical)

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Director

SIT, Pune





**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Mechanical Engineering)**  
**Programme Structure 2020-24**

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<b>1. OBJECTIVE</b>	<p>B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities &amp; liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values.</p> <p>Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.</p> <p>The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</p>			
<b>2. DURATION (IN MONTHS)</b>	48 (Full Time)			
<b>3. INTAKE</b>	120			
<b>4. RESERVATION</b>	<b>I. Within the sanctioned intake</b>	<b>a) SC (In Percentage)</b>	<b>b) ST (In Percentage)</b>	<b>c) Differently abled (In Percentage)</b>
		15	7.5	3
	<b>II. Over and above the sanctioned intake</b>	<b>a) Kashmiri Migrants (In Seats)</b>		<b>b) International Students (In Percentage)</b>
		2		15
<b>5. ELIGIBILITY</b>	<p>Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.</p> <p>B. Tech (Lateral entry to second year) :</p> <p>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.</p>			



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		<p>b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) and passed XII standard with mathematics as a subject.</p> <p>c) Provided that in case of students belonging to B. Sc. Stream, shall clear the subjects of Engineering Graphics / Engineering Drawing and Engineering Mechanics of the first year Engineering program along with the second year subjects.</p> <p>d) Provided further that, the students belonging to B. Sc. Stream shall be considered only after filling the supernumerary seats in this category with students belonging to the Diploma stream.</p> <p>e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc. Degree from a recognized University as defined by UGC, shall also be eligible for admission to the first year Engineering Degree courses subject to vacancies in the first year class in case the vacancies at lateral entry are exhausted. However the admissions shall be based strictly on the eligibility criteria as mentioned in a, b, c, and d above.</p>
6.	<b>SELECTION PROCEDURE</b>	Merit list by a valid score of Symbiosis Entrance Test (SIT EEE) or Joint Entrance Examination (JEE - Mains) or All States Engineering Entrance Test.
7.	<b>MEDIUM OF INSTRUCTION</b>	English
8.	<b>PROGRAMME PATTERN</b>	Semester
9.	<b>COURSE &amp; SPECIALIZATION</b>	<p>Annexure A: Bachelor of Technology (Mechanical 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. CAD/CAM</li> <li>2. Design of Heat Exchanger</li> <li>3. Smart Manufacturing (Industry 4.0)</li> <li>4. Automobile engineering with hybrid and autonomous technology</li> <li>5. Robotics and Technology</li> </ol> <p>Annexure C : Optional 'Minor' specialization area</p> <ol style="list-style-type: none"> <li>1. Artificial Intelligence and Machine learning (CS&amp;IT)</li> </ol>





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		2. Data Science (CS&IT) 3. Internet of things (CS&IT) 4. Smart Cities and Urban Analytics (CE) 5. Embedded Systems (ETC)			
<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>11.</b>	<b>ASSESSMENT</b>	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
<b>12.</b>	<b>STANDARD OF PASSING</b>	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			
<b>13.</b>	<b>AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE</b>	Bachelor of Technology (Mechanical Engineering) OR Bachelor of Technology (Mechanical Engineering) with Honours in CAD/CAM / Design of Heat Exchanger/Smart Manufacturing (Industry 4.0)/Automobile engineering with hybrid and autonomous technology / Robotics and Technology. OR Bachelor of Technology (Mechanical Engineering) with Minor in Artificial Intelligence and Machine learning (CS &IT) /Data Science (CS &IT)/ Internet of things (CS &IT) / Smart Cities and Urban Analytics (CE)/Embedded Systems (ETC) will be awarded at the end of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA			

out of 10 CGPA.							
14. NATURE WISE DISTRIBUTION OF CREDITS							
Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	20	0	0	0	0	0	20
2	19	0	0	0	1	0	20
3	21	2	0	0	0	2*	23
4	24	0	0	0	0	0	24
5	17	7	0	0	0	0	24
6	12	7	0	0	6	0	25
7	12	6	0	0	2	0	20
8	14	0	0	0	0	0	14
<b>Total</b>	<b>139</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>170</b>
<b>Optional Additional Courses (Honours)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Optional Additional Courses (Minor)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20/17</b>	<b>0/3</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Grand Total</b>							<b>190</b>

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

The revised programme structure supersedes the previously approved programme structure dated 29/06/2020 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.

Head - Academics

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**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Mechanical Engineering)**  
**Programme Structure 2020-24**

**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 1</b>													
<b>Generic Core Courses</b>													
TE7168	0701250101	Engineering Mathematics -I	BS		3	1	0	0	0	40	60	4	100
T7381	0701250102	Chemistry	BS		3	0	0	0	0	30	45	3	75
T7382	0701250103	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0701250104	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0701250105	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
T7925	0701250106	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
TE7286	0701250107	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0701250108	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25
T6732	0701250109	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
TE7188	0701250110	Environmental Science	MC		2	0	0	0	0	20	30	2	50
<b>Total</b>					<b>14</b>	<b>1</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>165</b>	<b>210</b>	<b>20</b>	<b>500</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TE7169	0701250201	Engineering Mathematics -II	BS		3	1	0	0	0	40	60	4	100
T7391	0701250202	Physics	BS		3	0	0	0	0	30	45	3	75
T7392	0701250203	Physics lab	BS		0	0	2	10	15	0	0	1	25



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## Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7383	0701250204	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701250205	Communication skills lab	HS		0	0	2	10	15	0	0	1	25
T7414	0701250206	Engineering Mechanics	ES		3	0	0	0	0	30	45	3	75
T7658	0701250207	Workshop Practice	ES		0	0	4	20	30	0	0	2	50
T2646	0701250208	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
TE7396	0701250209	Software Tools	ES		0	0	2	25	0	0	0	1	25
T6773	0701250210	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
<b>Total</b>					<b>13</b>	<b>1</b>	<b>10</b>	<b>65</b>	<b>60</b>	<b>170</b>	<b>180</b>	<b>19</b>	<b>475</b>
<b>Open Elective Courses Group</b>													
T6761	0701250211	Foundation of Ethics	OE		1	0	0	0	0	25	0	1	25
T6760	0701250212	Introduction to Indian Philosophy	OE		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 : 3</b>													
<b>Generic Core Courses</b>													
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
T7652	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
T7635	0701250305	Measurement and Metrology	PC		3	0	0	0	0	75	0	3	75



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**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7636	0701250306	Measurement and Metrology Lab	PC		0	0	2	10	15	0	0	1	25
TE7368	0701250307	Engineering Thermodynamics	PC		2	0	0	0	0	20	30	2	50
T7940	0701250308	Engineering Thermodynamics Lab	PC		0	0	2	10	15	0	0	1	25
TE7370	0701250309	Fluid Mechanics	PC		3	0	0	0	0	75	0	3	75
T7615	0701250310	Fluid Mechanics Lab	PC		0	0	2	10	15	0	0	1	25
T4005	0701250311	Integrated Disaster Management *			0	0	0	0	0	0	0	Non Letter Grade	0
TH4095	0701250312	Fitness for Life *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>16</b>	<b>1</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>260</b>	<b>165</b>	<b>21</b>	<b>525</b>
<b>Generic Elective Courses Group - I</b>													
T6184	0701250313	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6186	0701250314	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6188	0701250315	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>													
T8000	0701250401	Service Learning	HS		0	0	8	100	0	0	0	4	100



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## Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7960	0701250402	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
T7961	0701250403	Statistics, Probability and Numerical Methods lab	BS		0	0	2	10	15	0	0	1	25
T7632	0701250404	Manufacturing Technology	PC		3	0	0	0	0	30	45	3	75
T7633	0701250405	Manufacturing Technology Lab	PC		0	0	2	10	15	0	0	1	25
TE7372	0701250406	Heat Transfer	PC		3	0	0	0	0	30	45	3	75
T7619	0701250407	Heat Transfer Lab	PC		0	0	2	10	15	0	0	1	25
T7700	0701250408	Theory of Machines - I	PC		3	0	0	0	0	75	0	3	75
T7656	0701250409	Theory of Machines-I Lab	PC		0	0	2	10	15	0	0	1	25
F0002	0701250410	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7300	0701250411	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
<b>Total</b>					<b>14</b>	<b>0</b>	<b>20</b>	<b>190</b>	<b>60</b>	<b>215</b>	<b>135</b>	<b>24</b>	<b>600</b>
<b>Semester : 5</b>													
<b>Generic Core Courses</b>													
T7620	0701250501	I.C. Engines	PC		3	0	0	0	0	30	45	3	75
T7621	0701250502	I.C. Engines Lab	PC		0	0	2	10	15	0	0	1	25
T7625	0701250503	Machine Design - I	PC		3	0	0	0	0	75	0	3	75
F0003	0701250504	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
F0003	0701250505	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7290	0701250506	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
T6749	0701250507	Design Thinking	HS		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>14</b>	<b>0</b>	<b>6</b>	<b>60</b>	<b>15</b>	<b>305</b>	<b>45</b>	<b>17</b>	<b>425</b>
<b>Generic Elective Courses Group - I</b>													
T7612	0701250508	Fluid Machinery	PE		3	0	0	0	0	30	45	3	75
T7647	0701250509	Production Management	PE		3	0	0	0	0	30	45	3	75
T7653	0701250510	Theory of Machines - II	PE		3	0	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Generic Elective Courses Group - II</b>													
T7613	0701250511	Fluid Machinery Lab	PE		0	0	2	10	15	0	0	1	25
TE7386	0701250512	Production Management Lab	PE		0	0	2	10	15	0	0	1	25
T7654	0701250513	Theory of Machines - II Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Generic Elective Courses Group-III</b>													
TE7359	0701250514	Composite Materials	PE		3	0	0	0	0	30	45	3	75
TE7366	0701250515	Engineering Design Optimization	PE		3	0	0	0	0	30	45	3	75
TE7373	0701250516	Industrial Fluid Power	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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**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 6</b>													
<b>Generic Core Courses</b>													
TE7357	0701250601	CAD & CAM	PC		3	0	0	0	0	30	45	3	75
F0002	0701250602	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7291	0701250603	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
T7802	0701250604	Capstone Course	PC		2	0	0	0	0	50	0	2	50
T6774	0701250605	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
T7607	0701250606	CAD& CAM Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>9</b>	<b>0</b>	<b>6</b>	<b>60</b>	<b>15</b>	<b>180</b>	<b>45</b>	<b>12</b>	<b>300</b>
<b>Generic Elective Courses Group - I</b>													
TE7360	0701250607	Computational Fluid Dynamics	PE		3	0	0	0	0	30	45	3	75
TE7369	0701250608	Finite Element Methods	PE		3	0	0	0	0	30	45	3	75
TE7378	0701250609	Jigs and Fixtures	PE		3	0	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Generic Elective Courses Group-II</b>													
T7611	0701250611	Finite Element Methods Lab	PE		0	0	2	10	15	0	0	1	25
T7686	0701250610	Computational Fluid Dynamic Lab	PE		0	0	2	10	15	0	0	1	25
TE7063	0701250612	Jigs and Fixtures Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>



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**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Generic Elective Courses Group- III</b>													
T7644	0701250613	Operations Research	PE		3	0	0	0	0	30	45	3	75
TE7379	0701250614	Machine Design II	PE		3	0	0	0	0	30	45	3	75
TE7385	0701250615	Power Plant 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>Open Elective Courses Group - I</b>													
TE7388	0701250616	Quality Management Techniques	OE		3	0	0	0	0	30	45	3	75
TE7428	0701250617	Introduction to Image Processing	OE		3	0	0	0	0	30	45	3	75
TE7223	0701250618	Smart Urban Planning	OE		3	0	0	0	0	30	45	3	75
TE7240	0701250619	Water Resource Planning and Management	OE		3	0	0	0	0	30	45	3	75
TE7263	0701250620	Introduction to AI and Machine Learning	OE		3	0	0	0	0	30	45	3	75
TE7265	0701250621	Introduction to Data Science	OE		3	0	0	0	0	30	45	3	75
TE7319	0701250622	Electrical and Electronics Materials	OE		3	0	0	0	0	30	45	3	75
TE7335	0701250623	Introduction to Robotics	OE		3	0	0	0	0	30	45	3	75
TE7387	0701250624	Project Management	OE		3	0	0	0	0	30	45	3	75
T7393	0701250625	Computer Based Statistical Packages	OE		3	0	0	0	0	30	45	3	75
T7499	0701250626	Java	OE		3	0	0	0	0	30	45	3	75
T7574	0701250627	MATLAB	OE		3	0	0	0	0	30	45	3	75
T7020	0701250628	Nanotechnology	OE		3	0	0	0	0	30	45	3	75



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7339	0701250629	Renewable Energy Systems	OE		3	0	0	0	0	30	45	3	75
TE7351	0701250630	3D Printing and Prototyping	OE		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 Elective Courses Group - II</b>													
T7474	0701250631	Basics of Database	OE		3	0	0	0	0	30	45	3	75
T7509	0701250632	Open Source Technologies	OE		3	0	0	0	0	30	45	3	75
T7529	0701250633	Machine Learning	OE		3	0	0	0	0	30	45	3	75
T7616	0701250634	Fundamentals of Automotive Technology	OE		3	0	0	0	0	30	45	3	75
T7650	0701250635	Six sigma	OE		3	0	0	0	0	30	45	3	75
T7394	0701250636	Smart Materials	OE		3	0	0	0	0	30	45	3	75
T7584	0701250637	Printed Circuit Board (PCB) Design	OE		3	0	0	0	0	30	45	3	75
TE7171	0701250638	Introduction to Mathematical Modelling	OE		3	0	0	0	0	30	45	3	75
TE7195	0701250639	GIS Applications	OE		3	0	0	0	0	30	45	3	75
TE7204	0701250640	Intelligent Transportation Systems	OE		3	0	0	0	0	30	45	3	75
TE7338	0701250641	Principles of Modern Communication	OE		3	0	0	0	0	30	45	3	75
TE7334	0701250642	Introduction to Mechatronics	OE		3	0	0	0	0	30	45	3	75
TE7264	0701250643	Introduction to BIGDATA	OE		3	0	0	0	0	30	45	3	75
TE7376	0701250644	Introduction to Operations Research	OE		3	0	0	0	0	30	45	3	75
TE7377	0701250645	Introduction to Optimisation	OE		3	0	0	0	0	30	45	3	75



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Total Required Credits</b>					<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>			
<b>Semester : 7</b>													
<b>Generic Core Courses</b>													
T7804	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
T7674	0701250703	Cyber Security	ES		2	0	0	0	0	50	0	2	50
F0002	0701250704	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
T7649	0701250705	Refrigeration & Airconditioning Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>7</b>	<b>0</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>130</b>	<b>45</b>	<b>12</b>	<b>300</b>
<b>Generic Elective Courses Group - I</b>													
T7639	0701250706	Mechanical Vibration	PE		3	0	0	0	0	30	45	3	75
T7602	0701250707	Automobile Engineering	PE		3	0	0	0	0	30	45	3	75
TE7393	0701250708	Tool 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>Generic Elective Courses Group-III</b>													
TE7383	0701250709	Nature Inspired Optimization Techniques	PE		3	0	0	0	0	30	45	3	75
T7642	0701250710	Non Conventional Energy Sources	PE		3	0	0	0	0	30	45	3	75
T7676	0701250711	Total Quality Management	PE		3	0	0	0	0	30	45	3	75



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Total Required Credits</b>					<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Open Elective Courses Group</b>													
TE7438	0701250713	History of Science and Technology	OE		2	0	0	0	0	50	0	2	50
T2585	0701250712	Organizational Behaviour	OE		2	0	0	0	0	50	0	2	50
<b>Total Required Credits</b>					<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>2</b>	<b>50</b>
<b>Semester : 8</b>													
<b>Generic Core Courses</b>													
T7912	0701250801	Internship	PIS		0	0	24	180	120	0	0	12	300
T7802	0701250802	Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>28</b>	<b>200</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>350</b>



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**Abbreviations (Nature)**

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



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	1	19	20	500
Semester 2	4	16	20	500
Semester 3	8	15	23	575
Semester 4	11	13	24	600
Semester 5	13	11	24	600
Semester 6	8	17	25	625
Semester 7	6	14	20	500
Semester 8	0	14	14	350
<b>Total</b>	<b>51</b>	<b>119</b>	<b>170</b>	<b>4250</b>

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
TE7355	0701250517	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
T3276	0701250518	Digital Electronics	PC		2	0	0	0	0	50	0	2	50
T7928	0701250519	Automotive Engineering Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>CAD/CAM</b>													
<b>Specialization Core Courses</b>													
TE7434	0701250520	Basic and Advanced CATIA Lab	PC		0	0	6	30	45	0	0	3	75
TE7391	0701250522	Structural Dynamic Analysis Lab	PC		0	0	4	20	30	0	0	2	50
TE7380	0701250521	Manufacturing Engineering	PC		1	0	0	0	0	25	0	1	25
<b>Total</b>					<b>1</b>	<b>0</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>25</b>	<b>0</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Design of Heat Exchanger</b>													
<b>Specialization Core Courses</b>													
F0002	0701250523	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7371	0701250525	Heat Exchanger Simulation Lab	PC		0	0	2	10	15	0	0	1	25



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7381	0701250524	Materials and Fabrication Processes for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75
<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 : 5</b>													
<b>Smart Manufacturing (Industry 4.0)</b> <b>Specialization Core Courses</b>													
F0002	0701250526	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7349	0701250527	Wireless Sensor Network	PC		3	0	0	0	0	30	45	3	75
TE7262	0701250528	Internet of Things Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b> <b>Specialization Core Courses</b>													
TE7580	0701250646	Vehicle Dynamics and NVH Lab	PC		0	0	4	20	30	0	0	2	50
F0002	0701250647	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7435	0701250648	Automotive Engine and Transmission System	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>80</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	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>CAD/CAM Specialization Core Courses</b>													
TE7362	0701250649	Computer Aided Design II Lab	PC		0	0	6	30	45	0	0	3	75
TE7602	0701250650	Basics of CAM and CNC	PC		0	0	4	20	30	0	0	2	50
TE7582	0701250651	Structural Dynamics and Non Linear Analysis Lab	PC		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 : 6</b>													
<b>Design of Heat Exchanger Specialization Core Courses</b>													
TE7384	0701250652	Numerical Methods for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75
TE7649	0701250653	CFD Simulation for heat exchanger	PC		2	0	0	0	0	50	0	2	50
TE7143	0701250654	Advanced Finite Element Method Lab	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>80</b>	<b>45</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Smart Manufacturing (Industry 4.0) Specialization Core Courses</b>													
TE7616	0701250655	Artificial Intelligence and Machine Learning for Robotics and Automation	PC		3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7374	0701250656	Industrial Internet of Things	PC		2	0	0	0	0	20	30	2	50
TE7573	0701250657	Machine Learning and Artificial Intelligence Lab	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>CAD/CAM</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>Design of Heat Exchanger</b>													
<b>Specialization Core Courses</b>													



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Smart Manufacturing (Industry 4.0)</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>Automobile Engineering with Hybrid and Autonomous Technology</b>				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>CAD/CAM</b>				
Semester 5	1	5	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>1</b>	<b>19</b>	<b>20</b>	<b>500</b>
<b>Design of Heat Exchanger</b>				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Smart Manufacturing (Industry 4.0)</b>				
Semester 5	2	4	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>2</b>	<b>18</b>	<b>20</b>	<b>500</b>

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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7273	0701250529	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701250530	Machine Learning: Regression	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Data Science Specialization Core Courses</b>													
TE7281	0701250531	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701250532	R Programming	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>105</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Internet of Things Specialization Core Courses</b>													
TE7268	0701250533	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701250534	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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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
TE7220	0701250535	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701250536	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701250537	IOT for Smart Cities Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>6</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>60</b>	<b>90</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7801	0701250538	Project Phase- I	PIS		0	0	2	10	15	0	0	1	25
T7802	0701250539	Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7298	0701250540	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 : 6</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7266	0701250658	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
TE7271	0701250659	Machine Learning Clustering and Retrieval	PC		3	0	0	0	0	30	45	3	75

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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								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 Specialization Core Courses</b>													
T2228	0701250660	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701250661	Power BI	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Internet of Things Specialization Core Courses</b>													
TE7269	0701250662	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701250663	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
T7802	0701250664	Project Phase - I	PIS		0	0	4	50	0	0	0	2	50
T7802	0701250665	Seminar	PC		0	0	4	50	0	0	0	2	50



**Symbiosis Institute of Technology, Pune**  
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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7177	0701250666	Application of Sensor Technology to Smart Cities	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>3</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7802	0701250667	Project Phase- II	PIS		0	0	4	20	30	0	0	2	50
TE7325	0701250668	Embedded Linux	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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 Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125

**Symbiosis Institute of Technology, Pune**  
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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7802	0701250715	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 Specialization Core Courses</b>													
T7805	0701250714	Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
T7803	0701250716	Project Phase - II	PIS		0	0	6	30	45	0	0	3	75
<b>Total</b>					<b>0</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>75</b>
<b>Specialization Elective : Smart Cities and Urban Analytics</b>													
TE7204	0701250717	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
TE7234	0701250718	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>



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**Annexure C**  
**Optional 'Minor' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 7</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7802	0701250719	Project Phase- III	PIS		0	0	4	20	30	0	0	2	50
TE7304	0701250720	Advanced Microcontrollers and RTOS	PC		4	0	0	0	0	40	60	4	100
TE7305	0701250721	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>



**Symbiosis Institute of Technology, Pune**  
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**Annexure C**  
**Optional 'Minor' Specialization**

Semester	Internal Credits	External Credits	Total Credits	Total Marks
<b>Artificial Intelligence and Machine Learning</b>				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Data Science</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Internet of Things</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Smart Cities and Urban Analytics</b>				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Embedded Systems</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150



**Symbiosis Institute of Technology, Pune**  
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**Optional 'Minor' Specialization**

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



mandar sapre &lt;mandar.sapre@sitpune.edu.in&gt;

## Fwd: First Approval Letter

**Head Mechanical** <headmech@sitpune.edu.in>

Tue, Jul 27, 2021 at 1:35 PM

To: Chandrakant Sonawane <chandrakant.sonawane@sitpune.edu.in>, mandar sapre <mandar.sapre@sitpune.edu.in>

----- Forwarded message -----

From: **Dr K Kotecha** <director@sitpune.edu.in>

Date: Tue, Jul 27, 2021 at 1:28 PM

Subject: Fwd: First Approval Letter

To: DyDirector Academics <dydirectoracademics@sitpune.edu.in>, Rupali Nagar <rupali.nagar@sitpune.edu.in>, Head Mechanical <headmech@sitpune.edu.in>

----- Forwarded message -----

From: **head\_academics@siu.edu.in** <head\_academics@siu.edu.in>

Date: Tue, Jul 27, 2021 at 1:25 PM

Subject: First Approval Letter

To: <director@sitpune.edu.in>, <coe@siu.edu.in>, <ar@siu.edu.in>, <dydirectoracademics@sitpune.edu.in>, <os\_academics@su.edu.in>, <head\_academics@siu.edu.in>, <ar\_academics@siu.edu.in>



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

SIU/U-110(SIT, Pune)/2021/2786

Date: 27/07/2021

To  
The Director  
Symbiosis Institute of Technology, Pune

Subject: Approval of the Programme Structure/s for the academic year 2021-2022

Dear Sir/Madam,

This is to inform you that the following Programme Structure has been duly approved by the Academic Council for the Academic Year 2021-2022.

Sr.No.	Programme	Batch
1	Bachelor of Technology (Mechanical Engineering)	2021-2025

You may download the same using your login credentials using the link and the path mentioned-

Link:

<http://eduwiz.intechsolutionspune.in/eduwiz/login.html>

Path:

Academics->Catalogue->Programme Structure-> View Course Structure -> Select Institute -> Select Academic Year -> Select Programme -> Select Batch -> Show Course Structure -> Print Programme Structure.

Thanking you.

Sincerely,



Dr. Pravin Dange  
Head- Academics

Copy to: Controller of Examinations, SIU

1 Of 1

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K Kotecha, PhD(IIT Bombay)  
Director, Symbiosis Institute of Technology ([sitpune.edu.in](http://sitpune.edu.in))  
Dean, Faculty of Engineering ([siu.edu.in](http://siu.edu.in))  
Head, Symbiosis Centre for Applied Artificial Intelligence([scaai.edu.in](http://scaai.edu.in))  
Symbiosis International (Deemed University), Pune 412115  
Maharashtra, India

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Colonel (Dr) Anand Pandey, PhD (Mechanical), MBA, Alumni of IIM-A

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Google Scholar citation: <https://scholar.google.com/citations?user=FYeAv54AAAAJ&hl=en>  
Research gate: [https://www.researchgate.net/profile/Anand\\_Pandey5/unconfirmed?acceptedAuthorUid=2164325811](https://www.researchgate.net/profile/Anand_Pandey5/unconfirmed?acceptedAuthorUid=2164325811)



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**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Mechanical Engineering)**  
**Programme Structure 2021-25**

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<b>1. OBJECTIVE</b>	<p>B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities &amp; liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values.</p> <p>Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.</p> <p>The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</p>			
<b>2. DURATION (IN MONTHS)</b>	48 (Full Time)			
<b>3. INTAKE</b>	60			
<b>4. RESERVATION</b>	<b>I. Within the sanctioned intake</b>	<b>a) SC (In Percentage)</b>	<b>b) ST (In Percentage)</b>	<b>c) Differently abled (In Percentage)</b>
		15	7.5	3
	<b>II. Over and above the sanctioned intake</b>	<b>a) Kashmiri Migrants (In Seats)</b>		<b>b) International Students (In Percentage)</b>
		2		15
<b>5. ELIGIBILITY</b>	<p>Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.</p> <p>B. Tech (Lateral entry to second year) :</p> <p>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.</p>			





Celebrating 50 Years of Excellence

**Symbiosis Institute of Technology, Pune**  
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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 valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Any State Government Engineering Entrance Examination
7.	<b>MEDIUM OF INSTRUCTION</b>	English
8.	<b>PROGRAMME PATTERN</b>	Semester
9.	<b>COURSE &amp; SPECIALIZATION</b>	<p>Annexure A: Bachelor of Technology (Mechanical 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> <ol style="list-style-type: none"> <li>1. Automobile Engineering with Hybrid and Autonomous Technology</li> <li>2. CAD/CAM</li> <li>3. Design of Heat Exchanger</li> <li>4. Smart Manufacturing (Industry 4.0)</li> </ol> <p>Annexure C: Optional 'Minor' specialization area</p> <ol style="list-style-type: none"> <li>1. Artificial Intelligence and Machine Learning (CSE)</li> <li>2. Data Science (CSE)</li> <li>3. Internet of Things (CSE)</li> </ol>



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**Symbiosis Institute of Technology, Pune**  
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		4. Smart Cities and Urban Analytics (CE) 5. Embedded Systems (E&TC)			
<b>10.</b>	<b>FEE</b>		<b>Academic Fee p.a</b>	<b>Institute Deposit</b>	<b>Total</b>
		<b>Indian Students</b>	260000	20000	280000
		<b>International Students (USD equivalent to INR)</b>	390000	20000	410000
<b>Note: For additional optional specialization 'Honours' or 'Minor', an additional fees of Rs. 25000/- will be charged in the third year.</b>					
<b>11.</b>	<b>ASSESSMENT</b>	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
<b>12.</b>	<b>STANDARD OF PASSING</b>	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			
<b>13.</b>	<b>AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE</b>	Bachelor of Technology (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 (CSE) /Data Science (CSE)/ Internet of Things (CSE) / Smart Cities and Urban Analytics (CE)/ Embedded Systems (E&TC) will be awarded at the end of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.			

14. CLASSIFICATION OF CREDITS							
Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	20	0	0	0	0	1*	20
2	20	0	0	0	0	1*	20
3	21	2	0	0	0	1*	23
4	23	1	0	0	0	0	24
5	17	4	0	0	3	0	24
6	12	10	0	0	3	0	25
7	12	8	0	0	0	0	20
8	14	0	0	0	0	0	14
<b>Total</b>	<b>139</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>170</b>
<b>Optional Additional Courses (Honours)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Optional Additional Courses (Minor)</b>							
<b>Total</b>	<b>0</b>	<b>0</b>	<b>20/17**</b>	<b>0/3**</b>	<b>0</b>	<b>0</b>	<b>20</b>
<b>Grand Total</b>							<b>190</b>

\* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Fitness for Life', 'Certificate in COVID-19 Care for the Community' is mandatory for the award of degree.

The revised programme structure supersedes the previously approved programme structure dated 27/07/2021 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.

Head - Academics

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**Symbiosis Institute of Technology, Pune**  
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## Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 1</b>													
<b>Generic Core Courses</b>													
TE7168	0701250101	Engineering Mathematics -I	BS		3	1	0	0	0	40	60	4	100
T7381	0701250102	Chemistry	BS		3	0	0	0	0	30	45	3	75
T7382	0701250103	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0701250104	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0701250105	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
T7925	0701250106	Engineering Graphics Lab	ES		0	0	4	20	30	0	0	2	50
TE7286	0701250107	Programming and Problem Solving	ES		2	0	0	0	0	20	30	2	50
TE7287	0701250108	Programming and Problem Solving Lab	ES		0	0	2	10	15	0	0	1	25
T6732	0701250109	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
TE7188	0701250110	Environmental Science	MC		2	0	0	0	0	20	30	2	50
TH4272	0701250111	Certificate in COVID-19 Care for the Community *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>14</b>	<b>1</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>165</b>	<b>210</b>	<b>20</b>	<b>500</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TE7169	0701250201	Engineering Mathematics -II	BS		3	1	0	0	0	40	60	4	100



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Celebrating 50 Years of Excellence

## Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7391	0701250202	Physics	BS		3	0	0	0	0	30	45	3	75
T7392	0701250203	Physics lab	BS		0	0	2	10	15	0	0	1	25
T7383	0701250204	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701250205	Communication skills lab	HS		0	0	2	10	15	0	0	1	25
T7414	0701250206	Engineering Mechanics	ES		3	0	0	0	0	30	45	3	75
T7658	0701250207	Workshop Practice	ES		0	0	4	20	30	0	0	2	50
TE7300	0701250208	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
TE7396	0701250209	Software Tools	ES		0	0	2	25	0	0	0	1	25
T6873	0701250210	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
TH4095	0701250211	Fitness for Life *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>12</b>	<b>1</b>	<b>14</b>	<b>115</b>	<b>60</b>	<b>145</b>	<b>180</b>	<b>20</b>	<b>500</b>
<b>Semester : 3</b>													
<b>Generic Core Courses</b>													
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
T7652	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



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7635	0701250305	Measurement and Metrology	PC		3	0	0	0	0	75	0	3	75
T7636	0701250306	Measurement and Metrology Lab	PC		0	0	2	10	15	0	0	1	25
TE7368	0701250307	Engineering Thermodynamics	PC		2	0	0	0	0	20	30	2	50
T7940	0701250308	Engineering Thermodynamics Lab	PC		0	0	2	10	15	0	0	1	25
TE7370	0701250309	Fluid Mechanics	PC		3	0	0	0	0	75	0	3	75
T7615	0701250310	Fluid Mechanics Lab	PC		0	0	2	10	15	0	0	1	25
T4005	0701250311	Integrated Disaster Management *			0	0	0	0	0	0	0	Non Letter Grade	0
<b>Total</b>					<b>16</b>	<b>1</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>260</b>	<b>165</b>	<b>21</b>	<b>525</b>
<b>Generic Elective Courses Group</b>													
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
<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>													
T8000	0701250401	Service Learning	HS		0	0	8	100	0	0	0	4	100



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7691	0701250402	Statistics, Probability and Numerical Methods	BS		3	0	0	0	0	30	45	3	75
TE7692	0701250403	Statistics, Probability and Numerical Methods Lab	BS		0	0	2	10	15	0	0	1	25
T7632	0701250404	Manufacturing Technology	PC		3	0	0	0	0	30	45	3	75
T7633	0701250405	Manufacturing Technology Lab	PC		0	0	2	10	15	0	0	1	25
TE7372	0701250406	Heat Transfer	PC		3	0	0	0	0	30	45	3	75
T7619	0701250407	Heat Transfer Lab	PC		0	0	2	10	15	0	0	1	25
T7700	0701250408	Theory of Machines - I	PC		3	0	0	0	0	75	0	3	75
T7656	0701250409	Theory of Machines-I Lab	PC		0	0	2	10	15	0	0	1	25
T2646	0701250410	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
F0002	0701250411	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>15</b>	<b>0</b>	<b>16</b>	<b>140</b>	<b>60</b>	<b>240</b>	<b>135</b>	<b>23</b>	<b>575</b>
<b>Generic Elective Courses Group</b>													
T6872	0701250412	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
T6760	0701250413	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>													





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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
T7620	0701250501	I.C. Engines	PC		3	0	0	0	0	30	45	3	75
T7621	0701250502	I.C. Engines Lab	PC		0	0	2	10	15	0	0	1	25
T7625	0701250503	Machine Design - I	PC		3	0	0	0	0	75	0	3	75
TE7290	0701250504	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
T6749	0701250505	Design Thinking	HS		2	0	0	0	0	50	0	2	50
F0003	0701250506	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
F0003	0701250507	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
<b>Total</b>					<b>14</b>	<b>0</b>	<b>6</b>	<b>60</b>	<b>15</b>	<b>305</b>	<b>45</b>	<b>17</b>	<b>425</b>
<b>Generic Elective Courses Group- I</b>													
T7612	0701250508	Fluid Machinery	PE		3	0	0	0	0	30	45	3	75
T7647	0701250509	Production Management	PE		3	0	0	0	0	30	45	3	75
T7653	0701250510	Theory of Machines - II	PE		3	0	0	0	0	30	45	3	75
<b>Total Required Credits</b>					<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Generic Elective Courses Group- II</b>													
T7613	0701250511	Fluid Machinery Lab	PE		0	0	2	10	15	0	0	1	25
TE7386	0701250512	Production Management Lab	PE		0	0	2	10	15	0	0	1	25
T7654	0701250513	Theory of Machines - II Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>					<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Open Elective Courses Group</b>													
T7474	0701250514	Basics of Database	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0701250515	Open Source Technologies	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7529	0701250516	Machine Learning	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
T7616	0701250517	Fundamentals of Automotive Technology	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0701250518	Six sigma	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7700	0701250519	Smart Materials	OE	Applied Science	3	0	0	0	0	30	45	3	75
T7584	0701250520	Printed Circuit Board (PCB) Design	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7171	0701250521	Introduction to Mathematical Modelling	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7195	0701250522	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701250523	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7338	0701250524	Principles of Modern Communication Systems	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7334	0701250525	Introduction to Mechatronics	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7264	0701250526	Introduction to BIGDATA	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7376	0701250527	Introduction to Operations Research	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7377	0701250528	Introduction to Optimisation	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>													
TE7357	0701250601	CAD & CAM	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
T7802	0701250603	Capstone Course	PC		2	0	0	0	0	50	0	2	50
T6774	0701250604	Principles of Economics	HS		2	0	0	0	0	50	0	2	50
T7607	0701250605	CAD& CAM Lab	PC		0	0	2	10	15	0	0	1	25
F0002	0701250606	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>9</b>	<b>0</b>	<b>6</b>	<b>60</b>	<b>15</b>	<b>180</b>	<b>45</b>	<b>12</b>	<b>300</b>
<b>Generic Elective Courses Group- I</b>													
TE7360	0701250607	Computational Fluid Dynamics	PE		3	0	0	0	0	30	45	3	75



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7369	0701250608	Finite Element Methods	PE		3	0	0	0	0	30	45	3	75
TE7378	0701250609	Jigs and Fixtures	PE		3	0	0	0	0	30	45	3	75
<b>Total Required Credits</b>								<b>0</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>3</b>	<b>75</b>
<b>Generic Elective Courses Group- II</b>													
T7686	0701250610	Computational Fluid Dynamic Lab	PE		0	0	2	10	15	0	0	1	25
T7611	0701250611	Finite Element Methods Lab	PE		0	0	2	10	15	0	0	1	25
TE7063	0701250612	Jigs and Fixtures Lab	PE		0	0	2	10	15	0	0	1	25
<b>Total Required Credits</b>								<b>10</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>25</b>
<b>Generic Elective Courses Group- III</b>													
T7644	0701250613	Operations Research	PE		3	0	0	0	0	30	45	3	75
TE7379	0701250614	Machine Design II	PE		3	0	0	0	0	30	45	3	75
TE7385	0701250615	Power Plant 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>Generic Elective Courses Group- IV</b>													
TE7359	0701250616	Composite Materials	PE		3	0	0	0	0	30	45	3	75
TE7366	0701250617	Engineering Design Optimization	PE		3	0	0	0	0	30	45	3	75
TE7373	0701250618	Industrial Fluid Power	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	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Open Elective Courses Group</b>													
TE7388	0701250619	Quality Management Techniques	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7428	0701250620	Introduction to Image Processing	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7223	0701250621	Smart Urban Planning	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7240	0701250622	Water Resource Planning and Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7263	0701250623	Introduction to AI and Machine Learning	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7265	0701250624	Introduction to Data Science	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7319	0701250625	Electrical and Electronics Materials	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7335	0701250626	Introduction to Robotics	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7387	0701250627	Project Management	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7393	0701250628	Computer Based Statistical Packages	OE	Applied Science	3	0	0	0	0	30	45	3	75
T7499	0701250629	Java	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		
T7574	0701250630	MATLAB	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7698	0701250631	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7339	0701250632	Renewable Energy Systems	OE	Electronics & Tele-communication Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701250633	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 : 7</b>													
<b>Generic Core Courses</b>													
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
T7674	0701250703	Cyber Security	ES		2	0	0	0	0	50	0	2	50
T7649	0701250704	Refrigeration & Airconditioning Lab	PC		0	0	2	10	15	0	0	1	25
F0002	0701250705	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>7</b>	<b>0</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>130</b>	<b>45</b>	<b>12</b>	<b>300</b>
<b>Generic Elective Courses Group-I</b>													
T7639	0701250706	Mechanical Vibration	PE		3	0	0	0	0	30	45	3	75
T7602	0701250707	Automobile Engineering	PE		3	0	0	0	0	30	45	3	75



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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TE7393	0701250708	Tool 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>Generic Elective Courses Group- II</b>													
TE7383	0701250709	Nature Inspired Optimization Techniques	PE		3	0	0	0	0	30	45	3	75
T7642	0701250710	Non Conventional Energy Sources	PE		3	0	0	0	0	30	45	3	75
T7676	0701250711	Total Quality Management	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>													
T2585	0701250712	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
TE7438	0701250713	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>Semester : 8</b>													
<b>Generic Core Courses</b>													
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
<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>



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**Abbreviations (Nature)**

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





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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	1	19	20	500
Semester 2	4	16	20	500
Semester 3	8	15	23	575
Semester 4	11	13	24	600
Semester 5	13	11	24	600
Semester 6	8	17	25	625
Semester 7	6	14	20	500
Semester 8	0	14	14	350
<b>Total</b>	<b>51</b>	<b>119</b>	<b>170</b>	<b>4250</b>



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**Annexure B**  
**Optional 'Honours' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
TE7355	0701250529	Basics of Automotive Engineering	PC		3	0	0	0	0	30	45	3	75
TE7665	0701250530	Automotive Electronics and Instrumentation	PC		2	0	0	0	0	50	0	2	50
TE7666	0701250531	Automotive Vehicle Dynamics and NVH Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>CAD/CAM</b>													
<b>Specialization Core Courses</b>													
TE7434	0701250532	Basic and Advanced CATIA Lab	PC		0	0	6	30	45	0	0	3	75
TE7380	0701250533	Manufacturing Engineering	PC		1	0	0	0	0	25	0	1	25
TE7664	0701250534	Structural Non Linear and 3D Analysis Lab	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>1</b>	<b>0</b>	<b>10</b>	<b>50</b>	<b>75</b>	<b>25</b>	<b>0</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Design of Heat Exchanger</b>													
<b>Specialization Core Courses</b>													
F0002	0701250535	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50

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**Optional 'Honours' Specialization**

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7381	0701250536	Materials and Fabrication Processes for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75
TE7667	0701250537	Heat Exchanger Simulation Lab 1	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Smart Manufacturing (Industry 4.0)</b>													
<b>Specialization Core Courses</b>													
F0002	0701250538	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7668	0701250539	Modern Sensors and Actuators	PC		3	0	0	0	0	30	45	3	75
TE7673	0701250540	Sensors and Actuators Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>5</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>80</b>	<b>45</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
TE7669	0701250634	Hybrid Technology	PC		2	0	0	0	0	20	30	2	50
F0002	0701250635	Flexi-Credit Course	PC		2	0	0	0	0	50	0	2	50
TE7435	0701250636	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>

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 6</b>													
<b>CAD/CAM Specialization Core Courses</b>													
TE7362	0701250637	Computer Aided Design II Lab	PC		0	0	6	30	45	0	0	3	75
TE7670	0701250638	Computer Aided Manufacturing Lab	PC		0	0	4	20	30	0	0	2	50
TE7582	0701250639	Structural Dynamics and Non Linear Analysis Lab	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 : 6</b>													
<b>Design of Heat Exchanger Specialization Core Courses</b>													
TE7384	0701250640	Numerical Methods for Heat Exchanger	PC		3	0	0	0	0	30	45	3	75
TE7649	0701250641	CFD Simulation for heat exchanger	PC		2	0	0	0	0	50	0	2	50
TE7671	0701250642	Heat Exchanger Simulation Lab-2	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>80</b>	<b>45</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Smart Manufacturing (Industry 4.0) Specialization Core Courses</b>													
TE7672	0701250643	AI and ML for Smart Manufacturing	PC		3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7374	0701250644	Industrial Internet of Things	PC		2	0	0	0	0	20	30	2	50
TE7573	0701250645	Machine Learning and Artificial Intelligence Lab	PC		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Automobile Engineering with Hybrid and Autonomous Technology</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>CAD/CAM</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>Design of Heat Exchanger</b>													
<b>Specialization Core Courses</b>													



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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7805	0701250714	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Smart Manufacturing (Industry 4.0)</b>													
<b>Specialization Core Courses</b>													
T7805	0701250714	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701250715	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>Automobile Engineering with Hybrid and Autonomous Technology</b>				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>CAD/CAM</b>				
Semester 5	1	5	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>1</b>	<b>19</b>	<b>20</b>	<b>500</b>
<b>Design of Heat Exchanger</b>				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Smart Manufacturing (Industry 4.0)</b>				
Semester 5	2	4	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>2</b>	<b>18</b>	<b>20</b>	<b>500</b>

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7273	0701250541	Machine Learning: Classification	PC		3	0	0	0	0	30	45	3	75
TE7274	0701250542	Machine Learning: Regression	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 5</b>													
<b>Data Science Specialization Core Courses</b>													
TE7281	0701250543	Open Source Tools for Data Science	PC		4	0	0	0	0	40	60	4	100
TE7292	0701250544	R Programming	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>105</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Internet of Things Specialization Core Courses</b>													
TE7268	0701250545	Introduction to IOT	PC		4	0	0	0	0	40	60	4	100
TE7293	0701250546	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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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Smart Cities and Urban Analytics Specialization Core Courses</b>													
TE7220	0701250547	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7206	0701250548	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7207	0701250549	IOT for Smart Cities Lab	PC		0	0	2	10	15	0	0	1	25
<b>Total</b>					<b>6</b>	<b>0</b>	<b>2</b>	<b>10</b>	<b>15</b>	<b>60</b>	<b>90</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7801	0701250550	Specialization Project	PIS		0	0	2	10	15	0	0	1	25
T7802	0701250551	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
TE7298	0701250552	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 : 6</b>													
<b>Artificial Intelligence and Machine Learning Specialization Core Courses</b>													
TE7266	0701250646	Introduction to Deep Learning	PC		4	0	0	0	0	40	60	4	100
TE7271	0701250647	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	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Total</b>					<b>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>Specialization Core Courses</b>													
TE7247	0701250648	Business Analytics	PC		3	0	0	0	0	30	45	3	75
TE7284	0701250649	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>Specialization Core Courses</b>													
TE7269	0701250650	IOT Security and Privacy	PC		3	0	0	0	0	30	45	3	75
TE7295	0701250651	Software Defined Networking	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>90</b>	<b>6</b>	<b>150</b>
<b>Semester : 6</b>													
<b>Smart Cities and Urban Analytics</b>													
<b>Specialization Core Courses</b>													
T7802	0701250652	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701250653	Specialization Seminar	PC		0	0	4	50	0	0	0	2	50

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
TE7177	0701250654	Application of Sensor Technology to Smart Cities	PC		3	0	0	0	0	30	45	3	75
<b>Total</b>					<b>3</b>	<b>0</b>	<b>8</b>	<b>100</b>	<b>0</b>	<b>30</b>	<b>45</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Embedded Systems</b>													
<b>Specialization Core Courses</b>													
T7802	0701250655	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7325	0701250656	Embedded Linux	PC		4	0	0	0	0	40	60	4	100
<b>Total</b>					<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Artificial Intelligence and Machine Learning</b>													
<b>Specialization Core Courses</b>													
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
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Data Science</b>													
<b>Specialization Core Courses</b>													
T7805	0701250716	Specialization Project	PIS		0	0	10	50	75	0	0	5	125

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Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7802	0701250717	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Internet of Things</b>													
<b>Specialization Core Courses</b>													
T7805	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
<b>Total</b>					<b>0</b>	<b>0</b>	<b>14</b>	<b>70</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Smart Cities and Urban Analytics</b>													
<b>Specialization Core Courses</b>													
T7803	0701250718	Specialization Project	PIS		0	0	6	30	45	0	0	3	75
<b>Total</b>					<b>0</b>	<b>0</b>	<b>6</b>	<b>30</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>75</b>
<b>Specialization Elective : Smart Cities and Urban Analytics</b>													
TE7204	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
<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	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 7</b>													
<b>Embedded Systems Specialization Core Courses</b>													
T7802	0701250721	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
TE7304	0701250722	Advanced Microcontrollers and RTOS	PC		4	0	0	0	0	40	60	4	100
TE7305	0701250723	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>



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
<b>Artificial Intelligence and Machine Learning</b>				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Data Science</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Internet of Things</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Smart Cities and Urban Analytics</b>				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>4</b>	<b>16</b>	<b>20</b>	<b>500</b>
<b>Embedded Systems</b>				
Semester 5	0	7	7	175
Semester 6	0	6	6	150



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

