Symbiosis Institute of Technology, Pune
Bachelor of Technology (Artificial Intelligence and Machine Learning)
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<table>
<tr><td>1.</td><td>OBJECTIVE</td><td colspan="4">To generate competent manpower in the emerging areas of Artificial Intelligence and Machine Learning. To inculcate among the students an aptitude for engineering and research in the area of Artificial Intelligence and Machine Learning for generation of better and smarter solutions to real world problems.</td></tr>
<tr><td>2.</td><td>DURATION (IN MONTHS)</td><td colspan="4">48 (Full Time)</td></tr>
<tr><td>3.</td><td>INTAKE</td><td colspan="4">120</td></tr>
<tr><td rowspan="4">4.</td><td rowspan="4">RESERVATION</td><td rowspan="2">I.Within the sanctioned intake</td><td>a) SC
(In Percentage)</td><td>b) ST
(In Percentage)</td><td>c) Differently abled
(In Percentage)</td></tr>
<tr><td>15</td><td>7.5</td><td>3</td></tr>
<tr><td rowspan="2">II.Over and above the sanctioned intake</td><td colspan="2">a) Kashmiri Migrants
(In Seats)</td><td>b) International Students
(In Percentage)</td></tr>
<tr><td colspan="2">2</td><td>20</td></tr>
<tr><td>5.</td><td>ELIGIBILITY</td><td colspan="4">Passed 10+2 examination with Physics 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.
B. Tech (Lateral entry to second year) : 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. 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. 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. 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. e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc.</td></tr>
</table>

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		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.			
6.	**SELECTION PROCEDURE**	Selection would be based on joint merit of entrance exam score and PCM/PMV aggregate percentage.			
7.	**MEDIUM OF INSTRUCTION**	English			
8.	**PROGRAMME PATTERN**	Semester			
9.	**COURSE & SPECIALISATION**	Annexure A: Bachelor of Technology (Artificial Intelligence and Machine Learning) Students may pursue optional 'Minor' specialization in one of the specialization areas by completing additional 20 credits in Semester: 5, 6 and 7 as specified in Annexure C for Minor in the respective specialization area. Annexure C: Optional 'Minor' specialization area 1. Computing (CSE) 2. Security and Privacy (CSE) 3. Aerial Robotics and Drone Technology (RA) 4. Automobile Engineering with Hybrid and Autonomous Technology (ME) 5. Computer Vision (E&TC) 6. Embedded Systems (E&TC) 7. Smart Cities and Urban Analytics (CE)			
10.	**FEE**		**Academic Fee p.a**	**Institute Deposit**	**Total**

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	Indian Students (Amount in INR)		300000	20000	320000
	International Students	**NRI/ PIO/ OCI Category (Amount in US$)**	5875	275	6150
		Foreign National Category (Amount in US$)	1300	275	1575
11.	**ASSESSMENT**	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
12.	**STANDARD OF PASSING**	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			
13.	**AWARD OF DEGREE**	Bachelor of Technology (Artificial Intelligence and Machine Learning) OR Bachelor of Technology (Artificial Intelligence and Machine Learning) with a Minor in Computing / Security and Privacy /Aerial Robotics and Drone Technology / Automobile Engineering with Hybrid and Autonomous Technology / Computer Vision / Embedded Systems / Smart Cities and Urban Analytics 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 10.00 CGPA.			

14. CLASSIFICATION OF CREDITS

Semester	Generic Core	Generic Elective	Specialisation Core	Specialisation Elective	Open Elective	Non-Letter Grade Mandatory Course/s	Non-Letter Grade Audit Course/s	Total
Common								
1	20	0	0	0	0	1 *	As per the student's choice	20
2	19	0	0	0	0	1 *		19
3	20	1	0	0	0	0		21
4	21	2	0	0	0	1 *		23
5	23	0	0	0	3	0		26
6	12	10	0	0	3	0		25
7	12	10	0	0	0	0		22
8	14	0	0	0	0	1 *		14
Total	**141**	**23**	**0**	**0**	**6**	**0**		**170**
Optional Additional Courses (Minor)								
Total	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**20**
							Grand Total	**190**

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

The revised programme structure supersedes the previously approved programme structure dated 08/09/2025 for the programme.

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council.
Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Director - Academics

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Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 1													
Generic Core Courses													
TE7697	0701260101	Linear Algebra	BS		2	1	0	0	0	30	45	3	75
TE7545	0701260102	Chemistry	BS		2	0	0	0	0	20	30	2	50
TE7695	0701260103	Chemistry Lab	BS		0	0	2	10	15	0	0	1	25
T7540	0701260104	Basic Electrical and Electronics Engineering	ES		3	0	0	0	0	30	45	3	75
T7593	0701260105	Basic Electrical and Electronics Engineering Lab	ES		0	0	2	10	15	0	0	1	25
TE7556	0701260106	Introduction to Python Programming	ES		3	0	0	0	0	30	45	3	75
TE7555	0701260107	Introduction to Python Programming Lab	ES		0	0	2	10	15	0	0	1	25
T6732	0701260108	Critical Thinking	HS		1	0	0	0	0	25	0	1	25
T7674	0701260109	Cyber Security	PC		2	0	0	0	0	50	0	2	50
T2646	0701260110	Entrepreneurship Venture	HS		1	0	0	0	0	25	0	1	25
TE7300	0701260111	Tinker Lab	ES		0	0	4	50	0	0	0	2	50
TH4095	0701260112	Fitness for Life *			0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
				Total	**14**	**1**	**10**	**80**	**45**	**210**	**165**	**20**	**500**

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 2													
Generic Core Courses													
TE7543	0701260201	Calculus	BS		2	1	0	0	0	30	45	3	75
TE7540	0701260202	Physics	BS		2	0	0	0	0	20	30	2	50
TE7687	0701260203	Physics Lab	BS		0	0	2	10	15	0	0	1	25
TE7288	0701260204	Programming in C	ES		3	0	0	0	0	30	45	3	75
TE7289	0701260205	Programming in C Lab	ES		0	0	2	10	15	0	0	1	25
T7383	0701260206	Communication Skills	HS		2	0	0	0	0	20	30	2	50
T7384	0701260207	Communication skills lab	HS		0	0	2	10	15	0	0	1	25
T6873	0701260208	Creative Thinking	HS		1	0	0	0	0	25	0	1	25
TE7690	0701260209	Statistics for Data Science	BS		3	1	0	0	0	40	60	4	100
TE7748	0701260210	Software Tools for Artificial Intelligence and Machine Learning	BS		0	0	2	25	0	0	0	1	25
TE7188	0701260211	Environmental Science *			0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
				Total	**13**	**2**	**8**	**55**	**45**	**165**	**210**	**19**	**475**
Semester : 3													

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Generic Core Courses													
TE7699	0701260301	Probability and Random Processes	BS		2	1	0	0	0	30	45	3	75
TE7544	0701260302	Data Structures and Algorithms	PC		3	0	0	0	0	30	45	3	75
TE7546	0701260303	Data Structures and Algorithms Lab	PC		0	0	4	20	30	0	0	2	50
TEE7034	0701260304	Data Preprocessing and EDA Lab	PC		0	0	4	20	30	0	0	2	50
TEE7029	0701260305	Database Concepts for Data Science	ES		2	0	0	0	0	20	30	2	50
TEE7030	0701260306	Database Concepts for Data Science Lab	ES		0	0	4	20	30	0	0	2	50
T6749	0701260307	Design Thinking	HS		2	0	0	0	0	50	0	2	50
F7092	0701260308	Operating Systems	PC		3	0	0	0	0	75	0	3	75
F7093	0701260309	Operating Systems Lab	PC		0	0	2	25	0	0	0	1	25
Total					**12**	**1**	**14**	**85**	**90**	**205**	**120**	**20**	**500**
Generic Elective Courses Group (Choose Any One Course)													
T6872	0701260310	Foundation of Ethics	GE		1	0	0	0	0	25	0	1	25
T6760	0701260311	Introduction to Indian Philosophy	GE		1	0	0	0	0	25	0	1	25
Total Required Credits								**0**	**0**	**25**	**0**	**1**	**25**
Semester : 4													
Generic Core Courses													
T6774	0701260401	Principles of Economics	HS		2	0	0	0	0	50	0	2	50

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
F7055	0701260402	Programming with Java	PC		3	0	0	0	0	75	0	3	75
F7056	0701260403	Programming with Java Lab	PC		0	0	2	25	0	0	0	1	25
TE7499	0701260404	Supervised Machine Learning	PC		4	0	0	0	0	40	60	4	100
TE7500	0701260405	Supervised Machine Learning Lab	PC		0	0	4	20	30	0	0	2	50
TE7760	0701260406	Unsupervised Learning	PC		3	0	0	0	0	30	45	3	75
TE7761	0701260407	Unsupervised Learning Lab	PC		0	0	2	10	15	0	0	1	25
TE7290	0701260408	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
TE7542	0701260409	Discrete Mathematics	BS		2	1	0	0	0	30	45	3	75
T4005	0701260410	Integrated Disaster Management *			0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
Total					**14**	**1**	**12**	**105**	**45**	**225**	**150**	**21**	**525**
Generic Elective Courses Group (Choose Any One Course)													
T6184	0701260411	Basic German I	GE		2	0	0	0	0	50	0	2	50
T6186	0701260412	Basic French I	GE		2	0	0	0	0	50	0	2	50
T6188	0701260413	Basic Spanish I	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								**0**	**0**	**50**	**0**	**2**	**50**

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 5													
Generic Core Courses													
T8000	0701260501	Service Learning	HS		0	0	8	100	0	0	0	4	100
F7053	0701260502	Web and Mobile Application Development	PC		3	0	0	0	0	75	0	3	75
TE7753	0701260503	Deep Learning	PC		3	0	0	0	0	30	45	3	75
TE7754	0701260504	Deep Learning Lab	PC		0	0	2	10	15	0	0	1	25
TEE7101	0701260505	Natural Language Processing	PC		3	0	0	0	0	30	45	3	75
TEE7100	0701260506	Natural Language Processing Lab	PC		0	0	2	10	15	0	0	1	25
TE7663	0701260507	Data Visualization Lab	PC		0	0	4	20	30	0	0	2	50
TE7483	0701260508	Applications and use cases of Machine Learning	PC		0	0	4	20	30	0	0	2	50
TEE7033	0701260509	AI Ethics	PC		1	0	0	0	0	25	0	1	25
T7908	0701260510	Computer Networks	PC		3	0	0	0	0	30	45	3	75
				Total	**13**	**0**	**20**	**160**	**90**	**190**	**135**	**23**	**575**
Open Elective Courses Group (Choose Any One Course)													
TE7677	0701260511	Financial Mathematics	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7700	0701260512	Smart Materials	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7223	0701260513	Smart Urban Planning	OE	Civil Engineering	3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7240	0701260514	Water Resource Planning and Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7948	0701260515	Introduction to Cloud Computing	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7952	0701260516	User Interface and Experience Design	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TEE7018	0701260517	Engineering Simulation and Modeling Tools	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7428	0701260518	Introduction to Image Processing	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7810	0701260519	Industrial Revolution and Introduction of Industry 5.0	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
T7650	0701260520	Six Sigma	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 6													
Generic Core Courses													
TE7484	0701260601	Computer Vision	PC		3	0	0	0	0	30	45	3	75
TE7485	0701260602	Computer Vision Lab	PC		0	0	2	10	15	0	0	1	25
TE7565	0701260603	Reinforcement Learning	PC		3	0	0	0	0	30	45	3	75
TE7496	0701260604	Reinforcement Learning Lab	PC		0	0	2	10	15	0	0	1	25

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T7802	0701260605	Capstone Course	PC		2	0	0	0	0	50	0	2	50
TE7291	0701260606	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
				Total	**8**	**0**	**8**	**70**	**30**	**110**	**90**	**12**	**300**
Generic Elective Courses Group- I (Choose Any One Course)													
TE7490	0701260607	Generative Adversarial Networks	PE		3	0	0	0	0	30	45	3	75
TE7261	0701260608	Internet of Things	PE		3	0	0	0	0	30	45	3	75
TEE7031	0701260609	Optimization Techniques for Machine Learning	PE		3	0	0	0	0	30	45	3	75
				Total Required Credits				**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group- II (Choose Any One Course)													
TE7491	0701260610	Generative Adversarial Networks Lab	PE		0	0	2	10	15	0	0	1	25
TE7262	0701260611	Internet of Things Lab	PE		0	0	2	10	15	0	0	1	25
TEE7032	0701260612	Optimization Techniques for Machine Learning Lab	PE		0	0	2	10	15	0	0	1	25
				Total Required Credits				**10**	**15**	**0**	**0**	**1**	**25**
Generic Elective Courses Group- III (Choose Any One Course)													
TE7562	0701260613	Speech Systems	PE		3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7943	0701260614	Full Stack Development	PE		3	0	0	0	0	30	45	3	75
TE7536	0701260615	Embedded AI	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group- IV (Choose Any One Course)													
TE7563	0701260616	Speech Systems Lab	PE		0	0	2	10	15	0	0	1	25
TE7942	0701260617	Full Stack Development Lab	PE		0	0	2	10	15	0	0	1	25
TE7535	0701260618	Embedded AI Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								**10**	**15**	**0**	**0**	**1**	**25**
Open Elective Courses Group (Choose Any One Course)													
TE7698	0701260621	Nanotechnology	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7676	0701260622	Executive Corporate Communication For Impact	OE	Applied Science	3	0	0	0	0	30	45	3	75
TE7195	0701260623	GIS Applications	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7203	0701260624	Intelligent Transportation Management	OE	Civil Engineering	3	0	0	0	0	30	45	3	75
TE7297	0701260625	Software Testing Tools	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7756	0701260626	Open Source Technologies	OE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T7584	0701260627	Printed Circuit Board (PCB) Design	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TE7334	0701260628	Introduction to Mechatronics	OE	Electronics and Telecommunication Engineering	3	0	0	0	0	30	45	3	75
TEE7044	0701260629	Data Modelling and Analytics for Battery Energy Storage Systems	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
TE7351	0701260630	3D Printing and Prototyping	OE	Mechanical Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group - V (Choose Any One Course)													
T2585	0701260619	Organizational Behaviour	GE		2	0	0	0	0	50	0	2	50
TE7438	0701260620	History of Science and Technology	GE		2	0	0	0	0	50	0	2	50
Total Required Credits								**0**	**0**	**50**	**0**	**2**	**50**
GIP													
GA7023	0701260650	Global Immersion Programme - Academic			0	0	0	0	0	0	575	23	575

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Note: For students under Global Immersion Programme - Academic (0701260650), courses "Computer Vision" (0701260601),"Computer Vision Lab" (0701260602),"Reinforcement Learning" (0701260603),"Reinforcement Learning Lab" (0701260604),"Capstone Course" (0701260605),"Project Based Learning-II" (0701260606),"Generative Adversarial Networks" (0701260607),"Generative Adversarial Networks Lab" (0701260610),"Embedded AI" (0701260615),"Embedded AI Lab" (0701260618),"GIS Applications" (0701260623) will be waived off.													
Semester : 7													
Generic Core Courses													
T7804	0701260701	B.Tech Project	PIS		0	0	8	40	60	0	0	4	100
TE7493	0701260702	Multimodal AI	PC		3	0	0	0	0	30	45	3	75
TE7494	0701260703	Multimodal AI Lab	PC		0	0	2	10	15	0	0	1	25
TE7552	0701260704	Big Data Analytics	PC		3	0	0	0	0	30	45	3	75
TE7554	0701260705	Big Data Analytics Lab	PC		0	0	2	10	15	0	0	1	25
		Total			**6**	**0**	**12**	**60**	**90**	**60**	**90**	**12**	**300**
Generic Elective Courses Group- I (Choose Any One Course)													
TE7534	0701260706	Healthcare informatics	PE		3	0	0	0	0	30	45	3	75
TEE7094	0701260707	Graph Neural Networks	PE		3	0	0	0	0	30	45	3	75
TE7551	0701260708	Block chain Technologies	PE		3	0	0	0	0	30	45	3	75
		Total Required Credits						**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group- II (Choose Any One Course)													

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Annexure A

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7564	0701260709	AI in Wireless Communications	PE		3	0	0	0	0	30	45	3	75
TE7497	0701260710	Responsible AI	PE		3	0	0	0	0	30	45	3	75
TE7941	0701260711	MLOps	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group- III (Choose Any One Course)													
TE7561	0701260712	AI in Wireless Communications Lab	PE		0	0	2	10	15	0	0	1	25
TE7498	0701260713	Responsible AI Lab	PE		0	0	2	10	15	0	0	1	25
TE7940	0701260714	MLOps Lab	PE		0	0	2	10	15	0	0	1	25
Total Required Credits								**10**	**15**	**0**	**0**	**1**	**25**
Generic Elective Courses Group- IV (Choose Any One Course)													
TE7560	0701260715	Robotic Process Automation	PE		3	0	0	0	0	30	45	3	75
TE7532	0701260716	Smart Society	PE		3	0	0	0	0	30	45	3	75
TE7533	0701260717	AI for Banking and Finance	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 8													
Generic Core Courses													
T7912	0701260801	Internship	PIS		0	0	24	120	180	0	0	12	300

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T7802	0701260802	Seminar	PIS		0	0	4	20	30	0	0	2	50
SMC001	0701260803	*Vasudhaiva Kutumbakam **			0	0	0	0	0	0	0	Non - Letter Grade Mandatory	0
				Total	**0**	**0**	**28**	**140**	**210**	**0**	**0**	**14**	**350**

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
GE Generic Elective

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Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Semester 1	6	14	20	500
Semester 2	2	17	19	475
Semester 3	7	14	21	525
Semester 4	10	13	23	575
Semester 5	8	18	26	650
Semester 6	6	19	25	625
Semester 7	0	22	22	550
Semester 8	0	14	14	350
Total	**39**	**131**	**170**	**4250**

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Annexure C
Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 5													
Computing Specialisation Core Courses													
TE7248	0701260521	Cloud Computing	PC		3	0	0	0	0	30	45	3	75
TE7250	0701260522	Cloud Environment in Public Model	PC		3	0	0	0	0	30	45	3	75
		Total			**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 5													
Security and Privacy Specialisation Core Courses													
TE7296	0701260523	Software Security	PC		3	0	0	0	0	30	45	3	75
TE7301	0701260524	Usable Security	PC		3	0	0	0	0	30	45	3	75
		Total			**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 5													
Aerial Robotics and Drone Technology Specialisation Core Courses													
TE7850	0701260525	Introduction to Aerial Robotics and Drones	PC		3	0	0	0	0	30	45	3	75
TE7864	0701260526	Motion Planning and Control	PC		2	0	0	0	0	20	30	2	50
TE7865	0701260527	Motion Planning and Control lab	PC		0	0	2	10	15	0	0	1	25

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Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	**5**	**0**	**2**	**10**	**15**	**50**	**75**	**6**	**150**
Semester : 5													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7355	0701260528	Basics of Automotive Engineering	PE		3	0	0	0	0	30	45	3	75
TE7665	0701260529	Automotive Electronics and Instrumentation	PE		2	0	0	0	0	50	0	2	50
TE7666	0701260530	Automotive Vehicle Dynamics and NVH Lab	PE		0	0	2	10	15	0	0	1	25
				Total	**5**	**0**	**2**	**10**	**15**	**80**	**45**	**6**	**150**
Semester : 5													
Computer Vision Specialisation Core Courses													
TE7328	0701260531	Image Processing	PC		3	0	0	0	0	30	45	3	75
TE7329	0701260532	Image Processing Lab	PC		0	0	2	10	15	0	0	1	25
T3560	0701260533	Computer Vision	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 5													
Embedded Systems Specialisation Core Courses													

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7047	0701260534	Microcontrollers and Embedded C Programming	PC		3	0	0	0	0	30	45	3	75
TEE7046	0701260535	Microcontrollers and Embedded C Programming Lab	PC		0	0	2	10	15	0	0	1	25
TE7991	0701260536	Automotive Embedded System	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 5													
Smart Cities and Urban Analytics Specialisation Core Courses													
TE7206	0701260537	IOT for Smart Cities	PC		3	0	0	0	0	30	45	3	75
TE7220	0701260538	Smart Cities : Context Policy and Governance	PC		3	0	0	0	0	30	45	3	75
TE7207	0701260539	IOT for Smart Cities Lab	PC		0	0	2	10	15	0	0	1	25
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 6													
Computing Specialisation Core Courses													
TE7246	0701260631	Block Chain	PC		4	0	0	0	0	40	60	4	100
TE7249	0701260632	Cloud Computing Platforms	PC		3	0	0	0	0	30	45	3	75
				Total	**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**

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Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 6													
Security and Privacy Specialisation Core Courses													
TE7252	0701260633	Cryptography	PC		4	0	0	0	0	40	60	4	100
TE7258	0701260634	Hardware Security	PC		3	0	0	0	0	30	45	3	75
		Total			**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester : 6													
Aerial Robotics and Drone Technology Specialisation Core Courses													
TE7884	0701260635	Robotics Mobility and Perception	PC		3	0	0	0	0	30	45	3	75
TE7883	0701260636	Robotics Estimation and Learning	PC		2	0	0	0	0	20	30	2	50
TE7866	0701260637	Navigation and Communication Lab	PC		0	0	4	20	30	0	0	2	50
		Total			**5**	**0**	**4**	**20**	**30**	**50**	**75**	**7**	**175**
Semester : 6													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
TE7669	0701260638	Hybrid Technology	PE		2	0	0	0	0	20	30	2	50
F0002	0701260639	Flexi-Credit Course	PE		2	0	0	0	0	50	0	2	50
TE7435	0701260640	Automotive Engine and Transmission System	PE		3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	**7**	**0**	**0**	**0**	**0**	**100**	**75**	**7**	**175**
Semester : 6													
Computer Vision Specialisation Core Courses													
TEE7065	0701260641	Artificial Intelligence/Machine Learning based Computer Vision Techniques	PC		3	0	0	0	0	30	45	3	75
TEE7063	0701260642	Artificial Intelligence/Machine Learning based Computer Vision Techniques Lab	PC		0	0	2	10	15	0	0	1	25
TEE7064	0701260643	Object Detection and Tracking	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 6													
Embedded Systems Specialisation Core Courses													
TEE7042	0701260644	Model Based Design	PC		3	0	0	0	0	30	45	3	75
TEE7040	0701260645	Model Based Design Laboratory	PC		0	0	2	10	15	0	0	1	25
TEE7048	0701260646	Embedded Cyber Security	PC		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**2**	**10**	**15**	**60**	**90**	**7**	**175**
Semester : 6													

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Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Smart Cities and Urban Analytics Specialisation Core Courses													
T7802	0701260647	Specialization Project	PIS		0	0	4	50	0	0	0	2	50
T7802	0701260648	Specialization Seminar	PIS		0	0	4	50	0	0	0	2	50
TE7177	0701260649	Application of Sensor Technology to Smart Cities	PE		3	0	0	0	0	30	45	3	75
				Total	**3**	**0**	**8**	**100**	**0**	**30**	**45**	**7**	**175**
Semester : 7													
Computing Specialisation Core Courses													
T7805	0701260718	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701260719	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
				Total	**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Security and Privacy Specialisation Core Courses													
T7805	0701260718	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701260719	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
				Total	**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 7													
Aerial Robotics and Drone Technology Specialisation Core Courses													
T7805	0701260718	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701260719	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
		Total			**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Automobile Engineering with Hybrid and Autonomous Technology Specialisation Core Courses													
T7805	0701260718	Specialization Project	PIS		0	0	10	50	75	0	0	5	125
T7802	0701260719	Specialization Seminar	PIS		0	0	4	20	30	0	0	2	50
		Total			**0**	**0**	**14**	**70**	**105**	**0**	**0**	**7**	**175**
Semester : 7													
Computer Vision Specialisation Core Courses													
T7802	0701260720	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7804	0701260721	Specialization Seminar	PIS		0	0	8	40	60	0	0	4	100
		Total			**0**	**0**	**12**	**60**	**90**	**0**	**0**	**6**	**150**

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 7													
Embedded Systems Specialisation Core Courses													
T7802	0701260720	Specialization Project	PIS		0	0	4	20	30	0	0	2	50
T7804	0701260721	Specialization Seminar	PIS		0	0	8	40	60	0	0	4	100
		Total			**0**	**0**	**12**	**60**	**90**	**0**	**0**	**6**	**150**
Semester : 7													
Smart Cities and Urban Analytics Specialisation Core Courses													
T7803	0701260722	Specialization Project	PIS		0	0	6	30	45	0	0	3	75
		Total			**0**	**0**	**6**	**30**	**45**	**0**	**0**	**3**	**75**
Smart Cities and Urban Analytics (Specialisation Elective) (Choose Any One Course)													
TE7234	0701260723	Urban Hydrology and Hydraulics	PE		3	0	0	0	0	30	45	3	75
TE7205	0701260724	Intelligent Transportation Systems	PE		3	0	0	0	0	30	45	3	75
		Total Required Credits						**0**	**0**	**30**	**45**	**3**	**75**

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Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Computing				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	**0**	**20**	**20**	**500**
Security and Privacy				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	**0**	**20**	**20**	**500**
Aerial Robotics and Drone Technology				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	**0**	**20**	**20**	**500**
Automobile Engineering with Hybrid and Autonomous Technology				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
Total	**4**	**16**	**20**	**500**
Computer Vision				
Semester 5	0	7	7	175
Semester 6	0	7	7	175

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