Symbiosis Institute of Technology, Pune
Bachelor of Technology (Artificial Intelligence and Machine Learning)
Programme Structure 2026-2030

<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">180</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/ Computer Science/Electronics/ Information Technology/Biology/Informatics Practices/ Biotechnology/Technical Vocational subject/ Agriculture/Engineering Graphics/Business Studies /Entrepreneurship. Obtained at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together.
OR
Passed D.Voc. Stream in the same or allied sector. (The University will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to prepare Level playing field and desired learning outcomes of the programme).

B.Tech.: Lateral Entry</td></tr>
</table>

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		Passed Minimum Three-years/ Two-year (Lateral Entry) Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) in ANY branch of Engineering and Technology. OR Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks (40% marks or equivalent grade for Scheduled Caste / Scheduled Tribes) and passed 10+2 examination with Mathematics as a subject. OR Passed B. Voc/3-year D.Voc. Stream in the same allied sector. (The Constituent will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to achieve desired learning outcomes of the programme).
6.	**SELECTION PROCEDURE**	Merit list by valid score of Symbiosis Entrance Test (SITEEE) or Joint Entrance Examination (JEE - Main) or Any State Government Engineering Entrance Examination.
7.	**MEDIUM OF INSTRUCTION**	English
8.	**PROGRAMME PATTERN**	Semester
9.	**COURSE & SPECIALISATION**	Annexure A: Bachelor of Technology (Artificial Intelligence and Machine Learning) Students may pursue optional 'Honours' Specialisation in one of the Specialisation areas by completing additional 20 credits in Semester: 5, 6 and 7 as specified in Annexure B or optional "Minor' Specialisation in Specialisation by completing additional 18 credits in Semester: 3, 4, 5 and 6 as specified in Annexure C. Annexure B: Optional 'Honours' Specialisation area 1. Business Management and Analytics 2. Cloud Operations and Analytics 3. Digital Security and Forensics 4. Generative AI 5. Quantum Computing Annexure C: Optional 'Minor' Specialisation area

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		1. IoT and Embedded AI 2. Quantum Technologies 3. Smart Manufacturing and Intelligent Systems			
10.	**FEE**		**Academic Fee p.a**	**Institute Deposit**	**Total**
	Indian Students (Amount in INR)		400000	20000	420000
	International Students	**NRI/ PIO/ OCI Category (Amount in US$)**	7000	275	7275
		Foreign National Category (Amount in US$)	1300	275	1575
11.	**ASSESSMENT**	The theory courses will have 40% Continuous Assessment and 60% End Semester [University] examination, Lab courses (Practical) will have 60% Continuous Assessment and 40% End Semester [University] examination; however, some courses (not more than 30% of the total programme credits) may have 100% Continuous Assessment.			
12.	**STANDARD OF PASSING**	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			

13.	**AWARD OF DEGREE**	Bachelor of Technology (Artificial Intelligence and Machine Learning) OR Bachelor of Technology (Artificial Intelligence and Machine Learning) with Honours in Business Management and Analytics / Cloud Operations and Analytics / Digital Security and Forensics / Generative AI / Quantum Computing. OR Bachelor of Technology (Artificial Intelligence and Machine Learning) with Minor in Technology with IoT and Embedded AI / Quantum Technologies / Smart Manufacturing and Intelligent Systems will be awarded at the end of semester 8 examination by taking into consideration the performance of all semester examinations after obtaining a minimum 4.00 CGPA out of 10.00 CGPA.
14.	**CLASSIFICATION OF CREDITS**	

Semester	Basic Sciences	Engineering Sciences	Professional Core	Professional Elective	Humanities and Social Sciences including Management	Multidisciplinary Open Electives	Project/ Internship/ Seminar	Indian Knowledge System	Total Credits	No. of Mandatory Non-Credit Course/s	No. of Non-Credit Audit Course/s
Track 1											
1	8	3	5	0	2	0	0	2	20	0	As per the student's choice
2	7	6	6	0	1	0	0	0	20	1 *	
3	3	0	17	0	0	0	0	0	20	1 *	
4	3	4	8	0	0	3	2	0	20	1 *	
5	0	0	16	0	3	3	0	0	22	2 *	
6	0	0	10	6	1	3	2	0	22	1 *	
7	0	0	9	9	0	0	4	0	22	1 *	
8	0	0	0	0	0	0	14	0	14	0	
Total	**21**	**13**	**71**	**15**	**7**	**9**	**22**	**2**	**160**	**0**	
Track 2											
1	8	3	5	0	2	0	0	2	20	0	As per the
2	7	6	6	0	1	0	0	0	20	1 *	
3	3	0	17	0	0	0	0	0	20	1 *	
4	3	4	8	0	0	3	2	0	20	1 *	

											student's choice
5	0	0	16	0	3	3	0	0	22	2 *	
6	0	0	10	6	1	3	2	0	22	1 *	
7	0	0	6	0	0	0	16	0	22	1 *	
8	0	0	0	0	0	0	14	0	14	0	
Total	**21**	**13**	**68**	**6**	**7**	**9**	**34**	**2**	**160**	**0**	
Optional Additional Courses (Honours)											
5	0	0	7	0	0	0	0	0	7	0	As per the student's choice
6	0	0	7	0	0	0	0	0	7	0	
7	0	0	0	0	0	0	6	0	6	0	
Total	**0**	**0**	**14**	**0**	**0**	**0**	**6**	**0**	**20**	**0**	
Optional Additional Courses (Minor)											
3	0	0	5	0	0	0	0	0	5	0	As per the student's choice
4	0	0	4	0	0	0	0	0	4	0	
5	0	0	4	0	0	0	0	0	4	0	
6	0	0	0	0	0	0	5	0	5	0	
Total	**0**	**0**	**13**	**0**	**0**	**0**	**5**	**0**	**18**	**0**	
Optional Additional Courses (Minor) - Quantum Technologies											
3	0	0	3	0	0	0	0	0	3	0	As per the student's choice
4	0	0	6	0	0	0	0	0	6	0	
5	0	0	6	0	0	0	0	0	6	0	
6	0	0	3	0	0	0	0	0	3	0	
Total	**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**18**	**0**	

* Satisfactory completion of non credit courses 'Health and Wellness', '*Vasudhaiva Kutumbakam*' and 'Career Essentials I to V' is mandatory for award of degree.

Additional Note: #Health and Wellness Module I and Module II will be conducted during the semesters mentioned in the programme structure. However, the course will be listed on the students' grade sheets as "Health and Wellness" in the semester in which the institute's course code is officially assigned.

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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													
TEE7237	0701260101	Calculus	BS		3	1	0	0	0	40	60	4	100
TEE7244	0701260102	Fundamentals of Quantum Physics	BS		3	0	2	15	10	30	45	4	100
TEE7278	0701260103	Python Programming and Logic	PC		2	0	2	15	10	20	30	3	75
TEE7269	0701260104	Foundation of Artificial Intelligence	PC		2	0	0	0	0	20	30	2	50
TEE7317	0701260105	Microcontrollers and Sensors	ES		2	0	2	15	10	20	30	3	75
T6732	0701260106	Critical Thinking	HSMC		1	0	0	0	0	25	0	1	25
THM6150	0701260107	Technical and Professional Communication Skills	HSMC		0	0	2	25	0	0	0	1	25
THM6144	0701260108	Indian Knowledge Systems	IKS		2	0	0	0	0	50	0	2	50
				Total	**15**	**1**	**8**	**70**	**30**	**205**	**195**	**20**	**500**
Semester : 2													
Generic Core Courses													
TEE7255	0701260201	Linear Algebra	BS		2	1	0	0	0	30	45	3	75
TEE7257	0701260202	Statistics for Data Science	BS		3	1	0	0	0	40	60	4	100
TEE7297	0701260203	Practical Programming in C	ES		3	0	2	15	10	30	45	4	100
TM2278	0701260204	Introduction to Environment and Sustainability	ES		0	0	2	25	0	0	0	1	25
TEE7364	0701260205	Tinker and IDEA Lab	ES		0	0	2	25	0	0	0	1	25

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T6873	0701260206	Creative Thinking	HSMC		1	0	0	0	0	25	0	1	25
TEE7034	0701260207	Data Preprocessing and EDA Lab	PC		0	0	4	50	0	0	0	2	50
TE7748	0701260208	Software Tools for Artificial Intelligence and Machine Learning	PC		0	0	2	25	0	0	0	1	25
TEE7261	0701260209	AI System Engineering and Ethics	PC		3	0	0	0	0	75	0	3	75
TEE7265	0701260210	Career Essentials - I *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**12**	**2**	**12**	**140**	**10**	**200**	**150**	**20**	**500**
Semester : 3													
Generic Core Courses													
TEE7254	0701260301	Discrete Mathematics	BS		2	1	0	0	0	30	45	3	75
TEE7455	0701260302	Operating Systems	PC		3	0	2	15	10	30	45	4	100
TEE7429	0701260303	Supervised Machine Learning	PC		3	0	2	15	10	30	45	4	100
TEE7423	0701260304	Database Concepts for Data Science	PC		2	0	2	15	10	20	30	3	75
TEE7421	0701260305	Cloud Computing Essentials	PC		2	0	0	0	0	50	0	2	50
TEE7448	0701260306	Data Structures	PC		2	0	4	30	20	20	30	4	100

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7419	0701260307	Career Essentials - II *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TH4788		Health and Wellness Module I #	MC		0	0	0	0	0	0	0	0	0
				Total	**14**	**1**	**10**	**75**	**50**	**180**	**195**	**20**	**500**
Semester : 4													
Generic Core Courses													
TE7699	0701260401	Probability and Random Processes	BS		2	1	0	0	0	30	45	3	75
F0003	0701260402	Flexi-Credit Course	PC		2	0	2	25	0	50	0	3	75
TEE7430	0701260403	Unsupervised Machine Learning	PC		2	0	2	15	10	20	30	3	75
TEE7422	0701260404	Data Engineering	PC		2	0	0	0	0	50	0	2	50
TEE7450	0701260405	Design and Analysis of Algorithms	ES		2	0	2	15	10	20	30	3	75
TEE7478	0701260406	Design Thinking	ES		1	0	0	0	0	25	0	1	25
TE7290	0701260407	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
TEE7420	0701260408	Career Essentials - III *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TH4789		Health and Wellness Module II #	MC		0	0	0	0	0	0	0	0	0
				Total	**11**	**1**	**10**	**105**	**20**	**195**	**105**	**17**	**425**
Multidisciplinary Open Elective (Choose any one course)													
TEE7416	0701260409	Quantum Computing for Engineers	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
TEE7414	0701260410	Mathematics for Data Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
TEE7438	0701260411	Smart Cities Planning and Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
TEE7435	0701260412	Intelligent Waste Management Techniques	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
TEE7458	0701260413	Web Technologies	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
TEE7447	0701260414	Data Science	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
TEE7018	0701260415	Engineering Simulation and Modeling Tools	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
TEE7472	0701260416	Medical Electronics	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
TE7351	0701260417	3D Printing and Prototyping	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
TEE7476	0701260418	Battery Management Systems	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
TEE7489	0701260419	Fundamentals of Robotics and Automation	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7499	0701260420	Robotic Process Automation	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
				Total Required Credits				**0**	**0**	**30**	**45**	**3**	**75**
Semester : 5													
Generic Core Courses													
F0003	0701260501	Flexi-Credit Course	PC		2	0	2	25	0	50	0	3	75
P4527	0701260502	Deep Learning in Practice	PC		3	0	2	15	10	30	45	4	100
P4528	0701260503	Natural Language Processing and Linguistics	PC		3	0	2	15	10	30	45	4	100
P4529	0701260504	Computer Networks and Advances	PC		2	0	0	0	0	20	30	2	50
P4531	0701260505	Time Series Analysis and Forecasting	PC		2	0	2	25	0	50	0	3	75
P4618	0701260506	Service Learning	HSMC		0	0	4	50	0	0	0	2	50
T2646	0701260507	Entrepreneurship Venture	HSMC		1	0	0	0	0	25	0	1	25
P4784	0701260508	Career Essentials - IV *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
SMC001	0701260509	*Vasudhaiva Kutumbakam* *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	**13**	**0**	**12**	**130**	**20**	**205**	**120**	**19**	**475**
Multidisciplinary Open Elective (Choose any one course)													
P5210	0701260510	Financial Mathematics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5211	0701260511	Advanced Materials	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4656	0701260512	Sustainability Engineering- Design and Innovation	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4658	0701260513	Occupational Health and Safety Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4840	0701260514	Introduction to Cloud Computing	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4844	0701260515	Agile Methodologies	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P5277	0701260516	Electric and Hybrid Vehicles	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P4474	0701260517	Introduction to 5G Technology	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
T7650	0701260518	Six Sigma	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4472	0701260519	Embedded System and IoT	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P5216	0701260520	Industrial Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5217	0701260521	PLC and SCADA	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total Required Credits				**0**	**0**	**30**	**45**	**3**	**75**
Semester : 6													
Generic Core Courses													
P5225	0701260601	Computer Vision and Image Processing	PC		2	0	2	25	0	50	0	3	75
P4534	0701260602	Reinforcement Learning	PC		2	0	2	15	10	20	30	3	75
P4536	0701260603	Foundations of GEN AI and LLM	PC		2	0	2	15	10	20	30	3	75
P4538	0701260604	Human AI Interaction	PC		1	0	0	0	0	25	0	1	25
TE7291	0701260605	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50
P4406	0701260606	Organizational Behaviour	HSMC		1	0	0	0	0	25	0	1	25
P4785	0701260607	Career Essentials - V *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**8**	**0**	**10**	**105**	**20**	**140**	**60**	**13**	**325**
Programme Elective-I (Choose any one course)													
P4741	0701260608	Advances in AI	PE		2	0	2	15	10	20	30	3	75
P4742	0701260609	ML Optimization Techniques	PE		2	0	2	15	10	20	30	3	75
P4743	0701260610	AI Hardware and Systems	PE		2	0	2	15	10	20	30	3	75
P4744	0701260611	AI System Testing	PE		2	0	2	15	10	20	30	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Total Required Credits								**15**	**10**	**20**	**30**	**3**	**75**
Programme Elective-II (Choose any one course)													
P4745	0701260612	Speech Systems	PE		2	0	2	15	10	20	30	3	75
P4746	0701260613	Web and Mobile Application development	PE		2	0	2	15	10	20	30	3	75
P4786	0701260614	Graph Neural Networks and Applications	PE		2	0	2	15	10	20	30	3	75
Total Required Credits								**15**	**10**	**20**	**30**	**3**	**75**
Multidisciplinary Open Elective (Choose any one course)													
P5212	0701260615	Bioinformatics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5213	0701260616	Introduction to Space Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4657	0701260617	GIS and Remote Sensing Analytics	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4659	0701260618	Environmental Impact Assessment	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4830	0701260619	Software Testing and Quality Assurance	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4831	0701260620	Introduction to AR-VR	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4475	0701260621	Renewable Energy Systems	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
P4274	0701260622	Semiconductor Technology Trends	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P4448	0701260623	Supply Chain Management	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4449	0701260624	Smart Manufacturing and Introduction of Industry 5.0	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P5218	0701260625	Mobile Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5219	0701260626	Introduction to Aerial Robotics and Drone Technology	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 7													
Track 1													
T7804	0701260701	Project	PIS		0	0	8	60	40	0	0	4	100
P4542	0701260702	Multimodal Artificial Intelligence	PC		2	0	2	15	10	20	30	3	75
P4543	0701260703	Big Data Management and Analytics	PC		2	0	2	25	0	50	0	3	75
F0003	0701260704	Flexi-Credit Course	PC		2	0	2	25	0	50	0	3	75
SMC003	0701260705	Health and Wellness *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0

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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 Required Credits								**125**	**50**	**120**	**30**	**13**	**325**
Programme Elective-I (Choose any one course)													
P4747	0701260706	AI in Healthcare Informatics	PE		2	0	2	15	10	20	30	3	75
P4748	0701260707	AI in Energy and Sustainability	PE		2	0	2	15	10	20	30	3	75
P4749	0701260708	AI in Cyber Forensics	PE		2	0	2	15	10	20	30	3	75
P4750	0701260709	AI in Pharma and Life Science	PE		2	0	2	15	10	20	30	3	75
Total Required Credits								**15**	**10**	**20**	**30**	**3**	**75**
Programme Elective-II (Choose any one course)													
P4751	0701260710	AI in Business Management and Analytics	PE		2	0	2	15	10	20	30	3	75
P4752	0701260711	AI for Robotics	PE		2	0	2	15	10	20	30	3	75
P4753	0701260712	AI in AR/VR	PE		2	0	0	15	10	20	30	3	75
P4885	0701260713	AI in Agriculture	PE		2	0	2	15	10	30	20	3	75
Total Required Credits								**15**	**10**	**20**	**30**	**3**	**75**
Programme Elective-III (Choose any one course)													
P4754	0701260714	AI in LegalTech	PE		2	0	2	15	10	20	30	3	75
P4755	0701260715	AI in Predictive Maintenance	PE		2	0	2	15	10	20	30	3	75
P4757	0701260716	AI for Banking and Finance	PE		2	0	2	15	10	20	30	3	75
P4758	0701260717	AI in Operations and Supply Chain Management	PE		2	0	2	15	10	20	30	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 Required Credits								**15**	**10**	**20**	**30**	**3**	**75**
Track 2													
T7804	0701260701	Project	PIS		0	0	8	60	40	0	0	4	100
SMC003	0701260705	Health and Wellness *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
F0003	0701260718	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
F0003	0701260719	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
Total Required Credits								**60**	**40**	**150**	**0**	**22**	**250**
Generic Elective courses Group (Choose any one Course)													
T7912	0701260720	Startup Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	0701260721	Research Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	0701260722	Industry Internship	PIS		0	0	24	180	120	0	0	12	300
Total Required Credits								**180**	**120**	**0**	**0**	**12**	**300**
Semester: 8													
Generic Core Courses													
T7912	0701260801	Internship	PIS		0	0	24	180	120	0	0	12	300
T7802	0701260802	Seminar	PIS		0	0	4	30	20	0	0	2	50

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	0	0	28	210	140	0	0	14	350

Abbreviations (Nature)	Description
BS	Basic Sciences
ES	Engineering Sciences
PC	Professional Core
PE	Professional Elective
HSMC	Humanities and Social Sciences including Management
MOPE	Multidisciplinary Open Electives
PIS	Project, Internship, Seminar
IKS	Indian Knowledge System
L	Lecture
MC	Mandatory Course
T	Tutorial
CA	Continuous Assessment
ESE	End Semester Examination
LAB	Laboratory

Track 1 (T1): For Regular Students
Track 2 (T2): For Students opting for Internship/ Entrepreneurship

Definition:
Honours: Students have the option to pursue an "Honours" degree by completing an additional 20 credits within their major discipline, focusing on more advanced, specialised, emerging, or multidisciplinary courses beyond the standard requirements of the B.Tech degree.

Minors: Students have the option to pursue a "Minor" by completing 18 credits in a discipline/ specialisation other than their major discipline beyond the standard requirements of the B.Tech. Degree.

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Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
Track 1				
Semester 1	4	16	20	500
Semester 2	9	11	20	500
Semester 3	2	18	20	500
Semester 4	5	15	20	500
Semester 5	3	19	22	550
Semester 6	4	18	22	550
Semester 7	0	22	22	550
Semester 8	0	14	14	350
Total	**27**	**133**	**160**	**4000**
Track 2				
Semester 1	4	16	20	500
Semester 2	9	11	20	500
Semester 3	2	18	20	500
Semester 4	5	15	20	500
Semester 5	3	19	22	550
Semester 6	4	18	22	550
Semester 7	6	16	22	550
Semester 8	0	14	14	350
Total	**33**	**127**	**160**	**4000**

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Optional 'Honours' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester: 5													
Business Management and Analytics Specialisation Core Courses													
P4546	0701260522	AI for Business Analytics	PC		4	0	0	0	0	40	60	4	100
P4548	0701260523	AI in Human Resource Management	PC		3	0	0	0	0	30	45	3	75
		Total			**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester: 5													
Cloud Operations and Analytics Specialisation Core Courses													
P4846	0701260524	Advanced Cloud Computing	PC		3	0	2	15	10	30	45	4	100
P4848	0701260525	Cloud Infrastructure and Services	PC		2	0	2	15	10	20	30	3	75
		Total			**5**	**0**	**4**	**30**	**20**	**50**	**75**	**7**	**175**
Semester: 5													
Digital Security and Forensics Specialisation Core Courses													
P4852	0701260526	Vulnerability Assessment and Penetration Testing	PC		3	0	2	15	10	30	45	4	100
P4853	0701260527	Cyber Security and Artificial Intelligence	PC		2	0	2	15	10	20	30	3	75
		Total			**5**	**0**	**4**	**30**	**20**	**50**	**75**	**7**	**175**

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Optional 'Honours' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 5													
Generative AI Specialisation Core Courses													
P4553	0701260528	Gen AI Tools and Prompt Engineering	PC		4	0	0	0	0	40	60	4	100
P4554	0701260529	Gen AI Application Automation	PC		3	0	0	0	0	30	45	3	75
		Total			**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester : 5													
Quantum Computing Specialisation Core Courses													
P4549	0701260530	Quantum Fundamentals	PC		4	0	0	0	0	40	60	4	100
P4551	0701260531	Quantum Machine Learning	PC		3	0	0	0	0	30	45	3	75
		Total			**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester : 6													
Business Management and Analytics Specialisation Core Courses													
P4562	0701260627	Basic Business Statistics for Data Analysis	PC		4	0	0	0	0	40	60	4	100
P4563	0701260628	Data-Driven Decision Making	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 'Honours' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 6													
Cloud Operations and Analytics Specialisation Core Courses													
P4858	0701260629	Cloud-Based Data Analytics and Big Data	PC		3	0	2	15	10	30	45	4	100
P4859	0701260630	Modern DevOps and Continuous Delivery in Cloud Environments	PC		2	0	2	15	10	20	30	3	75
		Total			**5**	**0**	**4**	**30**	**20**	**50**	**75**	**7**	**175**
Semester : 6													
Digital Security and Forensics Specialisation Core Courses													
P4870	0701260631	Cyber Forensics and Investigation	PC		3	0	2	15	10	30	45	4	100
P4871	0701260632	Device Security	PC		2	0	2	15	10	20	30	3	75
		Total			**5**	**0**	**4**	**30**	**20**	**50**	**75**	**7**	**175**
Semester : 6													
Generative AI Specialisation Core Courses													
P4566	0701260633	Advance Generative Models	PC		3	0	0	0	0	30	45	3	75
P4568	0701260634	Generative AI for NLP	PC		4	0	0	0	0	40	60	4	100
		Total			**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**

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Optional 'Honours' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester: 6													
Quantum Computing Specialisation Core Courses													
P4564	0701260635	Quantum Cryptography	PC		3	0	0	0	0	30	45	3	75
P4565	0701260636	Quantum Computing and Applications	PC		4	0	0	0	0	40	60	4	100
				Total	**7**	**0**	**0**	**0**	**0**	**70**	**105**	**7**	**175**
Semester: 7													
Business Management and Analytics Specialisation Core Courses													
T7804	0701260723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701260724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
				Total	**0**	**0**	**12**	**90**	**60**	**0**	**0**	**6**	**150**
Semester: 7													
Cloud Operations and Analytics Specialisation Core Courses													
T7804	0701260723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701260724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
				Total	**0**	**0**	**12**	**90**	**60**	**0**	**0**	**6**	**150**

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Annexure B
Optional 'Honours' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester: 7													
Digital Security and Forensics Specialisation Core Courses													
T7804	0701260723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701260724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
				Total	**0**	**0**	**12**	**90**	**60**	**0**	**0**	**6**	**150**
Semester: 7													
Generative AI Specialisation Core Courses													
T7804	0701260723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701260724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
				Total	**0**	**0**	**12**	**90**	**60**	**0**	**0**	**6**	**150**
Semester: 7													
Quantum Computing Specialisation Core Courses													
T7804	0701260723	Honours Project	PIS		0	0	8	60	40	0	0	4	100
T7802	0701260724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
				Total	**0**	**0**	**12**	**90**	**60**	**0**	**0**	**6**	**150**

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Optional 'Honours' Specialisation

Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
Business Management and Analytics				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**
Cloud Operations and Analytics				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**
Digital Security and Forensics				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**
Generative AI				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**
Quantum Computing				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
Total	**0**	**20**	**20**	**500**

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Annexure C
Optional 'Minor' Specialisation

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 3													
IoT and Embedded AI Specialisation Core Courses													
TEE7468	0701260308	Embedded Systems and AI	PC		2	0	0	0	0	20	30	2	50
TEE7475	0701260309	Real-Time Data Processing in Embedded Systems	PC		2	0	2	15	10	20	30	3	75
				Total	**4**	**0**	**2**	**15**	**10**	**40**	**60**	**5**	**125**
Quantum Technologies Specialisation Core Courses													
P6788	0701260310	Foundations of Quantum Computing	**PC**		3	0	0	0	0	30	45	3	75
				Total	**3**	**0**	**0**	**0**	**0**	**30**	**45**	**3**	**75**
Smart Manufacturing and Intelligent Systems Specialisation Core Courses													
P6174	0701260311	Foundations of Industry 5.0 and Human–Machine Collaboration	PC		2	0	0	0	0	20	30	2	50
P6198	0701260312	Artificial Intelligence for Human–Centric Systems	PC		2	0	2	15	10	20	30	3	75
				Total	**4**	**0**	**2**	**15**	**10**	**40**	**60**	**5**	**125**
Semester : 4													

IoT and Embedded AI Specialisation Core Courses													
TEE7459	0701260421	AI-Driven IoT Applications	PC		3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Quantum Technologies Specialisation Core Courses													
P6784	0701260422	Foundations of Quantum Technologies	PC		3	0	0	0	0	30	45	3	75
P6785	0701260423	Quantum Technologies Lab	PC		2	0	2	15	10	20	30	3	75
				Total	**5**	**0**	**2**	**15**	**10**	**50**	**75**	**3**	**150**
Smart Manufacturing and Intelligent Systems Specialisation Core Courses													
P6178	0701260424	Internet of Things in Industry 5.0	PC		3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 5													
IoT and Embedded AI Specialisation Core Courses													
P4880	0701260532	Advanced Microcontrollers and RTOS	PC		3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Quantum Technologies Specialisation Core Courses													
P6789	0701260533	Survey of Quantum Technologies and Applications	**PC**		3	0	0	0	0	30	45	3	75
P6786	0701260534	Introduction to Quantum Computation	**PC**		3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Smart Manufacturing and Intelligent Systems Specialisation Core Courses													
P6791	0701260535	Applied AI in Industry 5.0	PC		3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester: 6													
IoT and Embedded AI Specialisation Core Courses													
P5683	0701260637	Edge Computing for IoT	PC		3	0	2	15	10	30	45	4	100
P5684	0701260638	Simulation Tools for Embedded AI	PC		0	0	2	15	10	0	0	1	25
				Total	**3**	**0**	**4**	**30**	**20**	**30**	**45**	**5**	**125**
Quantum Technologies Specialisation Core Courses													

P6787	0701260639	Introduction to Quantum Communication	PC		3	0	0	0	0	30	45	3	75
				Total	**3**	**0**	**0**	**0**	**0**	**30**	**45**	**3**	**75**
Smart Manufacturing and Intelligent Systems Specialisation Core Courses													
P6792	0701260640	Digital Twins and Simulation Technologies	PC		3	0	2	15	10	30	45	4	100
P6793	0701260641	Data Analytics and Predictive Intelligence	PC		0	0	2	15	10	0	0	1	25
				Total	**3**	**0**	**4**	**30**	**20**	**30**	**45**	**5**	**125**

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Annexure C
Optional 'Minor' Specialisation

Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
IoT and Embedded AI				
Semester 3	0	5	5	125
Semester 4	0	4	4	100
Semester 5	0	4	4	100
Semester 6	0	5	5	125
Total	**0**	**18**	**18**	**450**
Smart Manufacturing and Intelligent Systems				
Semester 3	0	5	5	125
Semester 4	0	4	4	100
Semester 5	0	4	4	100
Semester 6	0	5	5	125
Total	**0**	**18**	**18**	**450**
Quantum Technologies				
Semester 3	0	3	3	75
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	3	3	75
Total	**0**	**18**	**18**	**450**