

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Computer Science and Engineering)**  
**Programme Structure 2025-29**

<b>1. OBJECTIVE</b>	<p>B. Tech (Computer Science and Engineering) 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>	180			
<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		20
<b>5. ELIGIBILITY</b>	<p>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.</p> <p>OR</p> <p>Passed D.Voc. Stream in the same or allied sector.(The University will offer suitable bridge courses such as Mathematics, Physics,</p>			

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		<p>Engineering drawing, etc., for students coming from diverse backgrounds to prepare Level playing field and desired learning outcomes of the programme).</p> <p>B.Tech. : Lateral Entry</p> <p>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.</p> <p>OR</p> <p>Passed B.Sc. Degree from a recognized University as defined by UGC, with atleast 45% marks (40% marks or equivalent grade for Scheduled Caste / Scheduled Tribes) and passed 10+2 examination with Mathematics as a subject.</p> <p>OR</p> <p>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).</p>
6.	<b>SELECTION PROCEDURE</b>	Merit list by valid score of Symbiosis Entrance Test (SITEEE) 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; SPECIALISATION</b>	<p>Annexure A: Bachelor of Technology (Computer Science and Engineering)</p> <p>Students may pursue optional 'Honours' Specialisation in one of the specialisation areas by completing additional 20 credits in Semesters: 5, 6, and 7, as specified in Annexure B for Hounours or optional 'Minor' Specialisation by completing an additional 18 credits in Semesters: 3, 4, 5, and 6 Annexure C for Minor in the respective specialisation area as specified in Annexure C.</p> <p>Annexure B: Honours specialisation area</p> <ol style="list-style-type: none"> <li>1. Artificial Intelligence and Data Science</li> <li>2. Cloud Operations and Analytics</li> <li>3. Digital Security and Forensics</li> </ol>

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		4. Metaverse and Game Development Annexure C: Minor specialisation area 1. IoT and Embedded AI			
<b>10.</b>	<b>FEE</b>		<b>Academic Fee p.a</b>	<b>Institute Deposit</b>	<b>Total</b>
	<b>Indian Students (Amount in INR)</b>		375000	20000	395000
	<b>International Students</b>	<b>NRI/ PIO/ OCI Category (Amount in US\$)</b>	7000	275	7275
		<b>Foreign National Category (Amount in US\$)</b>	1300	275	1575
<b>11.</b>	<b>ASSESSMENT</b>	The theory courses will have 40% Continuous Assessment and 60% Term End [University] examination, Lab courses (Practical) will have 60% Continuous Assessment and 40% Term End [University] examination however, some courses (not more than 30% of the total programme credits) may have 100% Continuous Assessment.			
<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.			

13.	<b>AWARD OF DEGREE</b>	Bachelor of Technology (Computer Science and Engineering) OR Bachelor of Technology (Computer Science and Engineering) with Honours in Artificial Intelligence and Data Science/ Cloud Operations and Analytics/ Digital Security and Forensics/ Metaverse and Game Development OR/and Bachelor of Technology (Computer Science and Engineering) with Minor in IoT and Embedded AI as applicable will be awarded at the end of semester 8 examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.
14.	<b>CLASSIFICATION OF CREDITS</b>	

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
<b>Track 1</b>											
1	8	7	1	0	2	0	0	2	20	0	As per the student's choice
2	3	7	9	0	1	0	0	0	20	1*	
3	3	0	17	0	0	0	0	0	20	1*	
4	3	1	11	0	0	3	2	0	20	1*	
5	0	0	12	4	3	3	0	0	22	2*	
6	0	0	12	4	1	3	2	0	22	1*	
7	0	0	8	10	0	0	4	0	22	1*	
8	0	0	0	0	0	0	14	0	14	0	
<b>Total</b>	<b>17</b>	<b>15</b>	<b>70</b>	<b>18</b>	<b>7</b>	<b>9</b>	<b>22</b>	<b>2</b>	<b>160</b>	<b>0</b>	
<b>Track 2</b>											
1	8	7	1	0	2	0	0	2	20	0	As per the student's choice
2	3	7	9	0	1	0	0	0	20	1*	
3	3	0	17	0	0	0	0	0	20	1*	
4	3	1	11	0	0	3	2	0	20	1*	
5	0	0	12	4	3	3	0	0	22	2*	
6	0	0	12	4	1	3	2	0	22	1*	
7	0	0	3	0	0	0	19	0	22	1*	
8	0	0	0	0	0	0	14	0	14	0	
<b>Total</b>	<b>17</b>	<b>15</b>	<b>65</b>	<b>8</b>	<b>7</b>	<b>9</b>	<b>37</b>	<b>2</b>	<b>160</b>	<b>0</b>	

Optional Additional Courses (Honours)											
5	0	0	7	0	0	0	0	0	7	0	
6	0	0	7	0	0	0	0	0	7	0	
7	0	0	0	0	0	0	6	0	6	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>20</b>	<b>0</b>	
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	5	0	0	0	0	0	5	0	
<b>Total</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	

\* 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.

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

Director - Academics

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**Annexure A**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 1</b>													
<b>Generic Core Courses</b>													
TEE7237	0701220101	Calculus	BS		3	1	0	0	0	40	60	4	100
TEE7244	0701220102	Fundamentals of Quantum Physics	BS		3	0	2	15	10	30	45	4	100
TEE7301	0701220103	Programming Paradigm and Problem Solving	ES		2	0	2	15	10	20	30	3	75
TEE7303	0701220104	Software and Generative AI Tools	ES		0	0	2	15	10	0	0	1	25
TEE7310	0701220105	Digital Electronics and Logic Design	ES		2	0	2	15	10	20	30	3	75
TEE7296	0701220106	Object Oriented Programming	PC		0	0	2	15	10	0	0	1	25
THM6150	0701220107	Technical and Professional Communication Skills	HSMC		0	0	2	25	0	0	0	1	25
T6732	0701220108	Critical Thinking	HSMC		1	0	0	0	0	25	0	1	25
THM6144	0701220109	Indian Knowledge Systems	IKS		2	0	0	0	0	50	0	2	50
<b>Total</b>					<b>13</b>	<b>1</b>	<b>12</b>	<b>100</b>	<b>50</b>	<b>185</b>	<b>165</b>	<b>20</b>	<b>500</b>
<b>Semester : 2</b>													
<b>Generic Core Courses</b>													
TEE7255	0701220201	Linear Algebra	BS		2	1	0	0	0	30	45	3	75
TEE7317	0701220202	Microcontrollers and Sensors	ES		2	0	2	15	10	20	30	3	75
TEE7306	0701220203	Cyber Security	ES		1	0	2	25	0	25	0	2	50
TM2278	0701220204	Introduction to Environment and Sustainability	ES		0	0	2	25	0	0	0	1	25

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TEE7364	0701220205	Tinker and IDEA Lab	ES		0	0	2	25	0	0	0	1	25
TEE7302	0701220206	Python Programming	PC		2	0	2	15	10	20	30	3	75
TEE7290	0701220207	Computer Architecture and Organization	PC		2	0	2	15	10	20	30	3	75
TEE7304	0701220208	Software Engineering	PC		2	0	2	15	10	20	30	3	75
T6873	0701220209	Creative Thinking	HSMC		1	0	0	0	0	25	0	1	25
TEE7265	0701220210	Career Essentials - I *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>12</b>	<b>1</b>	<b>14</b>	<b>135</b>	<b>40</b>	<b>160</b>	<b>165</b>	<b>20</b>	<b>500</b>
<b>Semester : 3</b>													
<b>Generic Core Courses</b>													
TEE7254	0701220301	Discrete Mathematics	BS		2	1	0	0	0	30	45	3	75
P4802	0701220302	Data Structures	PC		2	0	4	30	20	20	30	4	100
P4804	0701220303	Operating Systems	PC		3	0	2	15	10	30	45	4	100
P4806	0701220304	Database Management Systems	PC		2	0	4	30	20	20	30	4	100
F0002	0701220305	Flexi-Credit Course	PC		0	0	4	50	0	0	0	2	50
P4807	0701220306	Programming with JAVA	PC		0	0	4	30	20	0	0	2	50
P4809	0701220307	Web Application Development	PC		0	0	2	15	10	0	0	1	25

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4781	0701220308	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
<b>Total</b>					<b>9</b>	<b>1</b>	<b>20</b>	<b>170</b>	<b>80</b>	<b>100</b>	<b>150</b>	<b>20</b>	<b>500</b>
<b>Semester : 4</b>													
<b>Generic Core Courses</b>													
TE7689	0701220401	Statistics and Probability	BS		2	1	0	0	0	30	45	3	75
P5230	0701220402	Design Thinking	ES		1	0	0	0	0	25	0	1	25
P4801	0701220403	Computer Networks	PC		3	0	2	15	10	30	45	4	100
P4803	0701220404	Design and Analysis of Algorithms	PC		2	0	2	15	10	20	30	3	75
P4808	0701220405	Data Management and Visualization	PC		2	0	2	15	10	20	30	3	75
P4868	0701220406	Advanced Python Lab	PC		0	0	2	15	10	0	0	1	25
TE7290	0701220407	Project Based Learning -I	PIS		0	0	4	50	0	0	0	2	50
P4782	0701220408	Career Essentials - III *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TH4789		Health and Wellness Module II #	MC		0	0	0	0	0	0	0	0	0
<b>Total</b>					<b>10</b>	<b>1</b>	<b>12</b>	<b>110</b>	<b>40</b>	<b>125</b>	<b>150</b>	<b>17</b>	<b>425</b>
<b>Multidisciplinary Open Elective Courses (Choose Any One Course)</b>													
P5208	0701220409	Quantum Computing for Engineers	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5209	0701220410	Mathematics for Data Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4627	0701220411	Smart Cities Planning and Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4633	0701220412	Intelligent Waste Management Techniques	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
TEE7018	0701220413	Engineering Simulation and Modeling Tools	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P4278	0701220414	Medical Electronics	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
TE7351	0701220415	3D Printing and Prototyping	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P5275	0701220416	Battery Management Systems	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4787	0701220417	Fundamentals of Machine Learning	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P4788	0701220418	AI System Development	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5214	0701220419	Fundamentals of Robotics and Automation	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P5215	0701220420	Robotic Process Automation	MOPE	Robotics and Automation	2	1	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 : 5</b>													
<b>Generic Core Courses</b>													
P4810	0701220501	Theory of Computation	PC		3	0	0	0	0	30	45	3	75
P4814	0701220502	Cryptography and Information Security	PC		2	0	2	15	10	20	30	3	75
P4816	0701220503	Data Science and Business Intelligence	PC		2	0	2	15	10	20	30	3	75
P4818	0701220504	Cloud Computing	PC		2	0	2	15	10	20	30	3	75
T2646	0701220506	Entrepreneurship Venture	HSMC		1	0	0	0	0	25	0	1	25
P4784	0701220507	Career Essentials - IV *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
SMC001	0701220508	Vasudhaiva Kutumbakam *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
T8000	0701220505	Service Learning	HSMC		0	0	4	50	0	0	0	2	50

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								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Total</b>					<b>10</b>	<b>0</b>	<b>10</b>	<b>95</b>	<b>30</b>	<b>115</b>	<b>135</b>	<b>15</b>	<b>375</b>
<b>Programme Elective (Choose any one course)</b>													
P4820	0701220509	Cloud Computing Tools and Techniques	PE		3	0	2	25	0	75	0	4	100
P4823	0701220510	Advanced Computer Networks	PE		3	0	2	25	0	75	0	4	100
P4827	0701220511	Advances in Machine Learning	PE		3	0	2	25	0	75	0	4	100
P4833	0701220512	Data Warehousing and Mining	PE		3	0	2	25	0	75	0	4	100
P4835	0701220513	Essentials of Augmented and Virtual Reality	PE		3	0	2	25	0	75	0	4	100
P4838	0701220514	IoT Data Analytics	PE		3	0	2	25	0	75	0	4	100
<b>Total Required Credits</b>								<b>25</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Multidisciplinary Open Elective Courses (Choose Any One Course)</b>													
P5210	0701220515	Financial Mathematics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5211	0701220516	Advanced Materials	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4656	0701220517	Sustainability Engineering- Design and Innovation	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4658	0701220518	Occupational Health and Safety Management	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4472	0701220519	Embedded System and IoT	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P5241	0701220520	Basics of 5G Technology	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P5277	0701220521	Electric and Hybrid Vehicles	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
T7650	0701220522	Six Sigma	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4789	0701220523	Optimization for ML Systems	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P4790	0701220524	Deep Learning Essentials	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5216	0701220525	Industrial Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5217	0701220526	PLC and SCADA	MOPE	Robotics and Automation	2	1	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>													
F0003	0701220601	Flexi-Credit Course	PC		2	0	2	25	0	50	0	3	75
P4813	0701220602	Compiler Design	PC		2	0	2	15	10	20	30	3	75
P4815	0701220603	Distributed System	PC		2	0	2	15	10	20	30	3	75
P4817	0701220604	Blockchain Technology	PC		2	0	2	15	10	20	30	3	75
P4406	0701220605	Organizational Behaviour	HSMC		1	0	0	0	0	25	0	1	25
TE7291	0701220606	Project Based Learning-II	PIS		0	0	4	50	0	0	0	2	50

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					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4785	0701220607	Career Essentials - V *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total</b>					<b>9</b>	<b>0</b>	<b>12</b>	<b>120</b>	<b>30</b>	<b>135</b>	<b>90</b>	<b>15</b>	<b>375</b>
<b>Programme Elective (Choose any one course)</b>													
P4819	0701220608	DevOps	PE		3	0	2	25	0	75	0	4	100
P4821	0701220609	Malware Analysis and Secure Coding	PE		3	0	2	25	0	75	0	4	100
P4822	0701220610	Computer Vision Applications	PE		3	0	2	25	0	75	0	4	100
P4824	0701220611	Pattern Recognition	PE		3	0	2	25	0	75	0	4	100
P4825	0701220612	Advanced Databases	PE		3	0	2	25	0	75	0	4	100
P4826	0701220613	AR and VR Applications	PE		3	0	2	25	0	75	0	4	100
P4828	0701220614	IoT Security	PE		3	0	2	25	0	75	0	4	100
<b>Total Required Credits</b>								<b>25</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Multidisciplinary Open Elective Courses (Choose any one course)</b>													
P5212	0701220615	Bioinformatics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5213	0701220616	Introduction to Space Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4657	0701220617	GIS and Remote Sensing Analytics	MOPE	Civil Engineering	2	1	0	0	0	30	45	3	75
P4659	0701220618	Environmental Impact Assessment	MOPE	Civil Engineering	2	1	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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4475	0701220619	Renewable Energy Systems	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P4274	0701220620	Semiconductor Technology Trends	MOPE	Electronics and Telecommunication Engineering	2	1	0	0	0	30	45	3	75
P4448	0701220621	Supply Chain Management	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4449	0701220622	Smart Manufacturing and Introduction of Industry 5.0	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4791	0701220623	Gen AI Tools and Techniques	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P4792	0701220624	Data Engineering and Applications	MOPE	Artificial Intelligence and Machine Learning	2	1	0	0	0	30	45	3	75
P5218	0701220625	Mobile Robotics	MOPE	Robotics and Automation	2	1	0	0	0	30	45	3	75
P5219	0701220626	Introduction to Aerial Robotics and Drone Technology	MOPE	Robotics and Automation	2	1	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>(Track 1)</b>													
<b>Generic Core Courses</b>													
F0003	0701220701	Flexi-Credit Course	PC		2	0	2	25	0	50	0	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
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4832	0701220702	Big Data Analytics	PC		2	0	2	15	10	20	30	3	75
P5280	0701220703	Project Management and Practises	PC		2	0	0	0	0	20	30	2	50
F0002	0701220704	Flexi-Credit Course	PE		2	0	0	0	0	50	0	2	50
T7804	0701220705	Project	PIS		0	0	8	60	40	0	0	4	100
SMC003	0701220706	Health and Wellness *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
<b>Total Required Credits</b>								<b>100</b>	<b>50</b>	<b>140</b>	<b>60</b>	<b>14</b>	<b>350</b>
<b>Programme Elective - I (Choose any one course)</b>													
P4837	0701220707	IoT in Smart Cities	PE		3	0	2	25	0	75	0	4	100
P4839	0701220708	Building and Training Large Language Models	PE		3	0	2	25	0	75	0	4	100
P4841	0701220709	Human Computer Interface	PE		3	0	2	25	0	75	0	4	100
P4842	0701220710	Distributed Databases	PE		3	0	2	25	0	75	0	4	100
P4836	0701220711	Cloud Security and Privacy	PE		3	0	2	25	0	75	0	4	100
P4872	0701220712	Business and Finance Analytics	PE		3	0	2	25	0	75	0	4	100
<b>Total Required Credits</b>								<b>25</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>Programme Elective - II (Choose any one course)</b>													
P5195	0701220713	Robotics and AI	PE		3	0	2	25	0	75	0	4	100

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
P4869	0701220714	IT Infrastructure and Automation	PE		3	0	2	25	0	75	0	4	100
P4845	0701220715	Digital Forensics	PE		3	0	2	25	0	75	0	4	100
P4849	0701220716	Information Storage & Retrieval	PE		3	0	2	25	0	75	0	4	100
P4843	0701220717	High Performance Computing	PE		3	0	2	25	0	75	0	4	100
P4847	0701220718	Soft Computing	PE		3	0	2	25	0	75	0	4	100
<b>Total Required Credits</b>								<b>25</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>4</b>	<b>100</b>
<b>(Track 2)</b> <b>Generic Core Courses</b>													
F0003	0701220719	Flexi-Credit Course	PC		0	0	6	75	0	0	0	3	75
T7804	0701220705	Project	PIS		0	0	8	60	40	0	0	4	100
SMC003	0701220706	Health and Wellness *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
T7677	0701220720	Technical Writing and Seminars	PIS		0	0	6	45	30	0	0	3	75
<b>Total Required Credits</b>								<b>180</b>	<b>70</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>250</b>
<b>Generic Elective courses Group - (Choose any one Course)</b>													
T7912	0701220721	Startup Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	0701220722	Research Internship	PIS		0	0	24	180	120	0	0	12	300

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
T7912	0701220723	Industry Internship	PIS		0	0	24	180	120	0	0	12	300
<b>Total Required Credits</b>								<b>180</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>300</b>
<b>Semester : 8</b>													
<b>Generic Core Courses</b>													
T7912	0701220801	Internship	PIS		0	0	24	180	120	0	0	12	300
T7802	0701220802	Seminar	PIS		0	0	4	30	20	0	0	2	50
<b>Total</b>					<b>0</b>	<b>0</b>	<b>28</b>	<b>210</b>	<b>140</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>350</b>

Abbreviations (Nature)	Description
<b>BS</b>	Basic Sciences
<b>ES</b>	Engineering Sciences
<b>PC</b>	Professional Core
<b>PE</b>	Professional Elective
<b>HSMC</b>	Humanities and Social Sciences including Management
<b>MOPE</b>	Multidisciplinary Open Electives
<b>PIS</b>	Project, Internship, Seminar
<b>IKS</b>	Indian Knowledge System
<b>L</b>	Lecture
<b>MC</b>	Mandatory Course
<b>T</b>	Tutorial
<b>CA</b>	Continuous Assessment
<b>ESE</b>	End Semester Examination
<b>LAB</b>	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
<b>Track 1</b>				
Semester 1	4	16	20	500
Semester 2	5	15	20	500
Semester 3	2	18	20	500
Semester 4	3	17	20	500
Semester 5	7	15	22	550
Semester 6	10	12	22	550
Semester 7	13	9	22	550
Semester 8	0	14	14	350
<b>Total</b>	<b>44</b>	<b>116</b>	<b>160</b>	<b>4000</b>
<b>Track 2</b>				
Semester 1	4	16	20	500
Semester 2	5	15	20	500
Semester 3	2	18	20	500
Semester 4	3	17	20	500
Semester 5	7	15	22	550
Semester 6	10	12	22	550
Semester 7	3	19	22	550
Semester 8	0	14	14	350
<b>Total</b>	<b>34</b>	<b>126</b>	<b>160</b>	<b>4000</b>

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**Optional 'Honours' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Artificial Intelligence and Data Science Specialisation Core Courses</b>													
P4854	0701220527	Data Processing and Visualization	PC		3	0	2	15	10	30	45	4	100
P4855	0701220528	Intelligent Systems and ML Models	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Cloud Operations and Analytics Specialisation Core Courses</b>													
P4846	0701220529	Advanced Cloud Computing	PC		3	0	2	15	10	30	45	4	100
P4848	0701220530	Cloud Infrastructure and Services	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 5</b>													
<b>Digital Security and Forensics Specialisation Core Courses</b>													
P4852	0701220531	Vulnerability Assessment and Penetration Testing	PC		3	0	2	15	10	30	45	4	100
P4853	0701220532	Cyber Security and Artificial Intelligence	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>

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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	La b	CA	ESE	CA	ESE		
<b>Semester : 5</b>													
<b>Metaverse and Game Development Specialisation Core Courses</b>													
P4850	0701220533	Introduction to AR, VR and XR	PC		3	0	2	15	10	30	45	4	100
P4851	0701220534	Principles of Game Design	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Artificial Intelligence and Data Science Specialisation Core Courses</b>													
P4864	0701220627	Natural Language Processing	PC		3	0	2	15	10	30	45	4	100
P4863	0701220628	Deep Learning	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Cloud Operations and Analytics Specialisation Core Courses</b>													
P4858	0701220629	Cloud-Based Data Analytics and Big Data	PC		3	0	2	15	10	30	45	4	100
P4859	0701220630	Modern DevOps and Continuous Delivery in Cloud Environments	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>

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**Optional 'Honours' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 6</b>													
<b>Digital Security and Forensics Specialisation Core Courses</b>													
P4870	0701220631	Cyber Forensics and Investigation	PC		3	0	2	15	10	30	45	4	100
P4871	0701220632	Device Security	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 6</b>													
<b>Metaverse and Game Development Specialisation Core Courses</b>													
P4860	0701220633	Modern Tools in Game Development	PC		3	0	2	15	10	30	45	4	100
P4861	0701220634	Design for Virtual Reality	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>5</b>	<b>0</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>75</b>	<b>7</b>	<b>175</b>
<b>Semester : 7</b>													
<b>Artificial Intelligence and Data Science Specialisation Core Courses</b>													
T7802	0701220724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
T7804	0701220725	Honours Project	PIS		0	0	8	60	40	0	0	4	100
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
<b>Semester : 7</b>													
<b>Cloud Operations and Analytics Specialisation Core Courses</b>													
T7802	0701220724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
T7804	0701220725	Honours Project	PIS		0	0	8	60	40	0	0	4	100
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Digital Security and Forensics Specialisation Core Courses</b>													
T7802	0701220724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
T7804	0701220725	Honours Project	PIS		0	0	8	60	40	0	0	4	100
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>
<b>Semester : 7</b>													
<b>Metaverse and Game Development Specialisation Core Courses</b>													
T7802	0701220724	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
T7804	0701220725	Honours Project	PIS		0	0	8	60	40	0	0	4	100
<b>Total</b>					<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>150</b>

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**Optional 'Honours' Specialisation**

Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
<b>Artificial Intelligence and Data Science</b>				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Cloud Operations and Analytics</b>				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Digital Security and Forensics</b>				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>
<b>Metaverse and Game Development</b>				
Semester 5	0	7	7	175
Semester 6	0	7	7	175
Semester 7	0	6	6	150
<b>Total</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>500</b>

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**Annexure C**  
**Optional 'Minor' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>Semester : 3</b>													
<b>IoT and Embedded AI Specialisation Core Courses</b>													
P4798	0701220309	Embedded Systems and AI	PC		2	0	0	0	0	20	30	2	50
P4799	0701220310	Real-Time Data Processing in Embedded Systems	PC		2	0	2	15	10	20	30	3	75
<b>Total</b>					<b>4</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>40</b>	<b>60</b>	<b>5</b>	<b>125</b>
<b>Semester : 4</b>													
<b>IoT and Embedded AI Specialisation Core Courses</b>													
P5823	0701220421	AI-Driven IoT Applications	PC		3	0	2	15	10	30	45	4	100
<b>Total</b>					<b>3</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Semester : 5</b>													
<b>IoT and Embedded AI Specialisation Core Courses</b>													
P4880	0701220535	Advanced Microcontrollers and RTOS	PC		3	0	2	15	10	30	45	4	100
<b>Total</b>					<b>3</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>10</b>	<b>30</b>	<b>45</b>	<b>4</b>	<b>100</b>
<b>Semester : 6</b>													

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**Annexure C**  
**Optional 'Minor' Specialisation**

Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
<b>IoT and Embedded AI Specialisation Core Courses</b>													
P5683	0701220635	Edge Computing for IoT	PC		3	0	2	15	10	30	45	4	100
P5684	0701220636	Simulation Tools for Embedded AI	PC		0	0	2	15	10	0	0	1	25
<b>Total Required Credits</b>								<b>30</b>	<b>20</b>	<b>30</b>	<b>45</b>	<b>5</b>	<b>125</b>

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**Optional 'Minor' Specialisation**

Semester	Continuous Assessment	End Semester Examination	Total Credits	Total Marks
<b>IoT and Embedded AI</b>				
Semester 3	0	5	5	125
Semester 4	0	4	4	100
Semester 5	0	4	4	100
Semester 6	0	5	5	125
<b>Total</b>	<b>0</b>	<b>18</b>	<b>18</b>	<b>450</b>