Symbiosis Institute of Technology, Nagpur
Bachelor of Technology (Computer Science and Engineering)
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<table>
<tr><td>1.</td><td>OBJECTIVE</td><td colspan="5">B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities & liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values.
Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.
The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</td></tr>
<tr><td>2.</td><td>DURATION (IN MONTHS)</td><td colspan="5">48 (Full Time)</td></tr>
<tr><td>3.</td><td>INTAKE</td><td colspan="5">300</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><td colspan="2">d) Domicile of Nagpur
(In Percentage)</td></tr>
<tr><td>15</td><td>7.5</td><td>3</td><td colspan="2">25
(Includes
i. Scheduled Caste (percentage) - 15
ii. Scheduled Tribes (percentage) - 7.5
iii. Differently Abled (percentage) - 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 colspan="3">b) International Students
(In Percentage)</td></tr>
<tr><td colspan="2">2</td><td colspan="3">25</td></tr>
<tr><td>5.</td><td>ELIGIBILITY</td><td colspan="5">Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Computer</td></tr>
</table>

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		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 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

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9.	**COURSE & SPECIALISATION**	Annexure A: Bachelor of Technology (Computer Science and Engineering) Students may pursue optional 'Honours' specialisation in one of the specialisation areas by completing an additional 20 credits in Semesters 4, 5, 6 and 7 as specified in Annexure B for Honours. Annexure B: Optional 'Honours' specialisation area. 1. Artificial Intelligence and Machine learning 2. Artificial Intelligence of Things 3. Cloud Computing 4. Cyber Security 5. Data Science and Analytics			
10.	**FEE**		**Academic Fee p.a**	**Institute Deposit**	**Total**
	Indian Students	**Other than Nagpur Domicile**	286000	20000	306000
		Nagpur Domicile	243100	20000	263100
	International Students	**NRI/ PIO/ OCI Category (Amount in US$)**	5300	275	5575
		Foreign National Category (Amount in US$)	1300	275	1575
Note: For additional optional Specialisation 'Honours', an additional fees of Rs. 25000/- will be charged in the first year.					
11.	**ASSESSMENT**	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			

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 (Computer Science and Engineering) OR Bachelor of Technology (Computer Science and Engineering) with Honours in Artificial Intelligence and Machine learning / Cyber Security/Artificial Intelligence of Things/Data Science and Analytics/ Cloud Computing will be awarded at the end of semester 8 examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

14. CLASSIFICATION OF CREDITS

Semester	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	9/6	2/5	6	0	2	0	0	2	21	0	As per the student's choice
2	6/9	9/6	4	0	1	0	0	0	20	0	
3	4	3	14	0	1	1	0	0	23	0	
4	0	0	18	0	0	2	2	0	22	2 *	
5	0	4	10	0	2	3	4	0	23	1 *	
6	0	0	8	6	3	0	2	0	19	1 *	
7	0	0	0	9	0	0	8	0	17	1 *	
8	0	0	0	3	0	0	12	0	15	0	
Total	**19**	**18**	**60**	**18**	**9**	**6**	**28**	**2**	**160**	**0**	
Track 2											
1	6/9	5/2	6	0	2	0	0	2	21	0	

2	9/6	6/9	4	0	1	0	0	0	20	0	
3	4	3	14	0	1	1	0	0	23	0	
4	0	0	18	0	0	2	2	0	22	2 *	As per the student's choice
5	0	4	10	0	2	3	4	0	23	1 *	
6	0	0	8	6	3	0	2	0	19	1 *	
7	0	0	0	3	0	0	14	0	17	1 *	
8	0	0	0	3	0	0	12	0	15	0	
Total	**19**	**18**	**60**	**12**	**9**	**6**	**34**	**2**	**160**	**0**	
Optional Additional Courses (Honours)											
4	0	0	6	0	0	0	0	0	6	0	As per the student's choice
5	0	0	6	0	0	0	0	0	6	0	
6	0	0	4	0	0	0	0	0	4	0	
7	0	0	4	0	0	0	0	0	4	0	
Total	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	

* Satisfactory completion of non credit courses 'Health and Wellness' and '*Vasudhaiva Kutumbakam*' is mandatory for award of degree.

The revised programme structure supersedes the previously approved programme structure dated 16/10/2025 for the programme.

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.
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													
Group A Generic Core Courses													
THM6145	0705210101	Aptitude and Reasoning- I	BS		2	0	2	15	10	50	0	3	75
TE7680	0705210102	Mathematics-I	BS		2	1	0	0	0	30	45	3	75
TEE7251	0705210103	Physics for Quantum Computing	BS		2	0	2	15	10	20	30	3	75
TEE7305	0705210104	Tinker Lab for Computer Science	ES		0	0	4	50	0	0	0	2	50
TEE7289	0705210106	Academic Writing Skills	PC		0	0	4	30	20	0	0	2	50
TEE7300	0705210107	Programming in C	PC		3	0	2	15	10	30	45	4	100
TM2278	0705210108	Introduction to Environment and Sustainability	HSMC		0	0	2	25	0	0	0	1	25
THM6150	0705210109	Technical and Professional Communication Skills	HSMC		0	0	2	15	10	0	0	1	25
THM6144	0705210110	Indian Knowledge Systems	IKS		2	0	0	0	0	50	0	2	50
				Total Required Credits				**165**	**60**	**180**	**120**	**21**	**525**
Group B Generic Core Courses													
THM6145	0705210101	Aptitude and Reasoning- I	BS		2	0	2	15	10	50	0	3	75
TE7680	0705210102	Mathematics-I	BS		2	1	0	0	0	30	45	3	75
TEE7305	0705210104	Tinker Lab for Computer Science	ES		0	0	4	50	0	0	0	2	50

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7248	0705210105	Nanotechnology: Concepts, Fabrication, and Emerging Applications	ES		2	0	2	15	10	20	30	3	75
TEE7289	0705210106	Academic Writing Skills	PC		0	0	4	30	20	0	0	2	50
TEE7300	0705210107	Programming in C	PC		3	0	2	15	10	30	45	4	100
TM2278	0705210108	Introduction to Environment and Sustainability	HSMC		0	0	2	25	0	0	0	1	25
THM6150	0705210109	Technical and Professional Communication Skills	HSMC		0	0	2	15	10	0	0	1	25
THM6144	0705210110	Indian Knowledge Systems	IKS		2	0	0	0	0	50	0	2	50
Total Required Credits								**165**	**60**	**180**	**120**	**21**	**525**
Semester : 2													
Group A Generic Core Courses													
THM6146	0705210201	Aptitude and Reasoning- II	BS		2	0	2	15	10	50	0	3	75
TE7689	0705210202	Statistics and Probability	BS		2	1	0	0	0	30	45	3	75
TEE7310	0705210204	Digital Electronics and Logic Design	ES		2	0	2	15	10	20	30	3	75
TEE7248	0705210205	Nanotechnology: Concepts, Fabrication, and Emerging Applications	ES		2	0	2	15	10	20	30	3	75
TEE7291	0705210206	Data Structures	PC		3	0	2	15	10	30	45	4	100
TEE7298	0705210207	Programming and Problem Solving	ES		2	0	2	15	10	20	30	3	75
TEE7292	0705210208	Design Thinking and Creativity Lab	HSMC		0	0	2	25	0	0	0	1	25

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Total Required Credits								**100**	**50**	**170**	**180**	**20**	**500**
Group B Generic Core Courses													
THM6146	0705210201	Aptitude and Reasoning- II	BS		2	0	2	15	10	50	0	3	75
TE7689	0705210202	Statistics and Probability	BS		2	1	0	0	0	30	45	3	75
TEE7251	0705210203	Physics for Quantum Computing	BS		2	0	2	15	10	20	30	3	75
TEE7310	0705210204	Digital Electronics and Logic Design	ES		2	0	2	15	10	20	30	3	75
TEE7291	0705210206	Data Structures	PC		3	0	2	15	10	30	45	4	100
TEE7298	0705210207	Programming and Problem Solving	ES		2	0	2	15	10	20	30	3	75
TEE7292	0705210208	Design Thinking and Creativity Lab	HSMC		0	0	2	25	0	0	0	1	25
Total Required Credits								**100**	**50**	**170**	**180**	**20**	**500**
Semester : 3													
Generic Core Courses													
TEE7411	0705210301	Aptitude and Reasoning Skills III	BS		0	0	2	15	10	0	0	1	25
TEE7412	0705210302	Discrete Mathematics and Graph Theory	BS		2	1	0	0	0	30	45	3	75
TEE7317	0705210303	Microcontrollers and Sensors	ES		2	0	2	15	10	20	30	3	75
T7996	0705210304	Computer Organization	PC		3	0	0	0	0	30	45	3	75
TEE7451	0705210305	Design and Analysis of Algorithms	PC		3	0	2	15	10	30	45	4	100
F0003	0705210306	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7294	0705210307	Introduction to Cyber Security	PC		2	0	0	0	0	20	30	2	50
T2646	0705210308	Entrepreneurship Venture	HSMC		1	0	0	0	0	25	0	1	25
TEE7454	0705210309	Machine Learning Fundamentals	PC		2	0	0	0	0	20	30	2	50
TH4788		Health and Wellness Module I #			0	0	0	0	0	0	0	0	0
				Total	**13**	**0**	**2**	**15**	**10**	**190**	**135**	**14**	**350**
Multi-disciplinary Open Elective Courses (Choose any one Course)													
T6872	0705210310	Foundation of Ethics	MOPE	Applied Science	1	0	0	0	0	25	0	1	25
T6760	0705210311	Introduction to Indian Philosophy	MOPE	Applied Science	1	0	0	0	0	25	0	1	25
				Total Required Credits				**0**	**0**	**25**	**0**	**1**	**25**
Semester : 4													
Generic Core Courses													
TEE7442	0705210401	Computer Networks	PC		3	0	2	15	10	30	45	4	100
TEE7449	0705210402	Database Management Systems	PC		2	0	4	30	20	20	30	4	100
F0003	0705210403	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
TEE7455	0705210404	Operating Systems	PC		3	0	2	15	10	30	45	4	100
TE7299	0705210405	Theory of Computation	PC		3	0	0	0	0	30	45	3	75
TE7290	0705210406	Project Based Learning -I	PIS		0	0	4	30	20	0	0	2	50

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
SMC003	0705210407	Health and Wellness *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TEE7420	0705210408	Career Essentials - III			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TH4789		Health and Wellness Module II #			0	0	0	0	0	0	0	0	0
				Total	**9**	**0**	**6**	**45**	**30**	**135**	**90**	**12**	**300**
Multi-disciplinary Open Elective Courses (Choose any one course)													
T6186	0705210409	Basic French I	MOPE	Applied Science	2	0	0	0	0	50	0	2	50
T6184	0705210410	Basic German I	MOPE	Applied Science	2	0	0	0	0	50	0	2	50
T6188	0705210411	Basic Spanish I	MOPE	Applied Science	2	0	0	0	0	50	0	2	50
				Total Required Credits				**0**	**0**	**50**	**0**	**2**	**50**
Semester : 5													
Generic Core Courses													
P5368	0705210501	Compiler Construction	PC		3	0	2	15	10	30	45	4	100

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7125	0705210502	Data Compression	ES		3	1	0	0	0	40	60	4	100
F0003	0705210503	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
P5369	0705210504	Introduction to Android Programming	PC		2	0	2	15	10	20	30	3	75
P4618	0705210505	Service Learning	HSMC		0	0	4	50	0	0	0	2	50
T7902	0705210506	Internship	PIS		0	0	4	50	0	0	0	2	50
TE7291	0705210507	Project Based Learning-II	PIS		0	0	4	30	20	0	0	2	50
P4784	0705210508	Career Essentials - IV *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
				Total	**11**	**1**	**16**	**160**	**40**	**165**	**135**	**20**	**500**
Multi-disciplinary Open Elective Courses (Choose any one Course)													
TEE7018	0705210509	Engineering Simulation and Modeling Tools	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7810	0705210510	Industrial Revolution and Introduction of Industry 5.0	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7428	0705210511	Introduction to Image Processing	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
T7650	0705210512	Six Sigma	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TE7952	0705210513	User Interface and Experience Design	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 6													
Generic Core Courses													
TE7951	0705210601	DevOps	PC		0	0	4	30	20	0	0	2	50
F0003	0705210602	Flexi-Credit Course	PC		3	0	0	0	0	75	0	3	75
TE7282	0705210603	Optimization Techniques and Algorithms	PC		3	0	0	0	0	30	45	3	75
T7802	0705210604	Project Based Learning-III	PIS		0	0	4	30	20	0	0	2	50
P4785	0705210605	Career Essentials - V *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
Total					**6**	**0**	**8**	**60**	**40**	**105**	**45**	**10**	**250**
Multi-disciplinary Open Elective Courses (Choose any one course)													
TEE7153	0705210616	Mathematical Techniques for Machine Learning	MOPE	Artificial Intelligence and Machine Learning	3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7114	0705210617	Basics of Internet of Things and Raspberry Pi	MOPE	Artificial Intelligence and Machine Learning	3	0	0	0	0	30	45	3	75
TEE7141	0705210618	Grid Computing	MOPE	Computer Science and Engineering and Information Technology	3	0	0	0	0	30	45	3	75
TEE7133	0705210619	Distributed Computing and System	MOPE	Computer Science and Engineering	3	0	0	0	0	30	45	3	75
TEE7157	0705210620	Neural Networks for Data Science	MOPE	Computer Science and Engineering and Information Technology	3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Generic Elective Courses Group - I (Choose any one Course)													
TE7276	0705210606	Natural Language Processing	PE		3	0	0	0	0	30	45	3	75
TEE7162	0705210607	Programming with SENSEnuts IoT Platform	PE		3	0	0	0	0	30	45	3	75
TE7916	0705210608	Cloud Computing Tools and Techniques	PE		3	0	0	0	0	30	45	3	75
TE7953	0705210609	Information and Network Security	PE		3	0	0	0	0	30	45	3	75
TE7088	0705210610	Digital Image Processing	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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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TE7484	0705210611	Computer Vision	PE		3	0	0	0	0	30	45	3	75
TEE7113	0705210612	Artificial Intelligence for IoT	PE		3	0	0	0	0	30	45	3	75
TEE7124	0705210613	Cyber Security in Cloud	PE		3	0	0	0	0	30	45	3	75
TEE7154	0705210614	Mobile and Wireless Security	PE		3	0	0	0	0	30	45	3	75
T3366	0705210615	Predictive Analytics	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**
Semester : 7													
Track -1													
SMC001	0705210701	*Vasudhaiva Kutumbakam* *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
T7808	0705210702	B.Tech Project	PIS		0	0	16	120	80	0	0	8	200
Total Required Credits								**120**	**80**	**0**	**0**	**8**	**200**
Generic Elective Courses - Group I (Choose any One Course)													
TEE7163	0705210703	Recommender Systems	PE		3	0	0	0	0	30	45	3	75
TEE7142	0705210704	Image Processing with IoT	PE		3	0	0	0	0	30	45	3	75
TEE7116	0705210705	Business Analytics with Cloud	PE		3	0	0	0	0	30	45	3	75

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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
TEE7156	0705210706	Networking and Content Delivery with Web Services	PE		3	0	0	0	0	30	45	3	75
TEE7169	0705210707	Web and Text Analysis	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)													
T3675	0705210708	Business Intelligence	PE		3	0	0	0	0	30	45	3	75
TEE7137	0705210709	Fog Computing and IoT	PE		3	0	0	0	0	30	45	3	75
TEE7132	0705210710	Disaster Recovery and Backup Storage in Cloud	PE		3	0	0	0	0	30	45	3	75
TEE7144	0705210711	Information Security and Audit Monitoring	PE		3	0	0	0	0	30	45	3	75
T3367	0705210712	Social Media Analytics	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)													
TEE7117	0705210713	Business for Data Driven Companies	PE		3	0	0	0	0	75	0	3	75
TEE7134	0705210714	Drones in IoT	PE		3	0	0	0	0	75	0	3	75
TEE7120	0705210715	Container and Serverless Computing	PE		3	0	0	0	0	75	0	3	75
TEE7136	0705210716	Exploit Writing	PE		3	0	0	0	0	75	0	3	75
T3458	0705210717	Healthcare analytics	PE		3	0	0	0	0	75	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
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Total Required Credits								**0**	**0**	**75**	**0**	**3**	**75**
Track - 2													
F0003	0705210718	Flexi-Credit Course	PE		3	0	0	0	0	75	0	3	75
T7908	0705210719	Internship-I	PIS		0	0	20	120	80	0	0	8	200
T7802	0705210720	Seminar	PIS		0	0	4	0	0	20	30	2	50
T7804	0705210721	Project	PIS		0	0	8	60	40	0	0	4	100
Total Required Credits								**180**	**120**	**95**	**30**	**17**	**425**
Semester : 8													
Generic Core Courses													
T7912	0705210801	Internship	PIS		0	0	24	180	120	0	0	12	300
Total					**0**	**0**	**24**	**180**	**120**	**0**	**0**	**12**	**300**
Generic Elective Courses (Choose any One Course)													
T3561	0705210802	Human Computer Interaction	PE		3	0	0	0	0	30	45	3	75
TEE7143	0705210803	Industrial IoT 4.0	PE		3	0	0	0	0	30	45	3	75
TEE7166	0705210804	Sensor-Cloud for Internet of Things	PE		3	0	0	0	0	30	45	3	75
TEE7152	0705210805	Malware Analysis	PE		3	0	0	0	0	30	45	3	75
TEE7161	0705210806	Penetration Testing	PE		3	0	0	0	0	30	45	3	75
Total Required Credits								**0**	**0**	**30**	**45**	**3**	**75**

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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	Term End Examination	Total Credits	Total Marks
Track 1				
Semester 1	5	16	21	525
Semester 2	1	19	20	500
Semester 3	5	18	23	575
Semester 4	5	17	22	550
Semester 5	7	16	23	575
Semester 6	3	16	19	475
Semester 7	3	14	17	425
Semester 8	0	15	15	375
Total	**29**	**131**	**160**	**4000**
Track 2				
Semester 1	5	16	21	525
Semester 2	1	19	20	500
Semester 3	5	18	23	575
Semester 4	5	17	22	550
Semester 5	7	16	23	575
Semester 6	3	16	19	475
Semester 7	3	14	17	425
Semester 8	0	15	15	375
Total	**29**	**131**	**160**	**4000**

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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 : 4													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7704	0705210412	Artificial Intelligence and Machine Learning	PC	Artificial Intelligence and Machine Learning	2	0	0	0	0	20	30	2	50
				Total	**2**	**0**	**0**	**0**	**0**	**20**	**30**	**2**	**50**
Specialisation Core Courses													
TEE7426	0705210413	Machine Learning	PC	Artificial Intelligence and Machine Learning	3	0	2	15	10	30	45	4	100
				Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Semester : 4													
Specialisation Core Courses													
TEE7443	0705210414	Cyber Security	PC	Cyber Security	2	0	0	0	0	20	30	2	50
TEE7452	0705210415	Digital Water Marking and Steganography	PC	Cyber Security	3	0	2	15	10	30	45	4	100
				Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Semester : 4													

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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		
Artificial Intelligence of Things Specialisation Core Courses													
T3520	0705210416	Introduction to Internet of Things	PC	Artificial Intelligence of Things	2	0	0	0	0	20	30	2	50
				Total	**2**	**0**	**0**	**0**	**0**	**20**	**30**	**2**	**50**
Specialisation Core Courses													
TEE7426	0705210413	Machine Learning	PC	Artificial Intelligence of Things	3	0	2	15	10	30	45	4	100
				Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Semester : 4													
Data Science and Analytics Specialisation Core Courses													
T3442	0705210417	Introduction to data Sciences	PC	Data Science and Analytics	2	0	0	0	0	20	30	2	50
				Total	**2**	**0**	**0**	**0**	**0**	**20**	**30**	**2**	**50**
Specialisation Core Courses													
T3866	0705210418	Foundation of Data Engineering	PC	Data Science and Analytics	3	0	2	15	10	30	45	4	100
				Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Semester : 4													

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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		
Cloud Computing Specialisation Core Courses													
T3422	0705210419	Introduction to Cloud Technology	PC	Cloud Computing	2	0	0	0	0	20	30	2	50
P5374	0705210420	Introduction to Cloud Computing	PC	Cloud Computing	3	0	2	15	10	30	45	4	100
		Total			**5**	**0**	**2**	**15**	**10**	**50**	**75**	**6**	**150**
Semester : 5													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
TE7279	0705210514	Neural Networks	PC	Artificial Intelligence and Machine Learning	3	0	0	0	0	30	45	3	75
TEE7167	0705210515	Soft Computing	PC	Artificial Intelligence and Machine Learning	3	0	0	0	0	30	45	3	75
		Total			**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 5													
Cyber Security Specialisation Core Courses													
TEE7135	0705210516	Ethical Hacking	PC	Cyber Security	3	0	0	0	0	30	45	3	75
TEE7165	0705210517	Security and Risk Management	PC	Cyber Security	3	0	0	0	0	30	45	3	75
		Total			**6**	**0**	**0**	**0**	**0**	**60**	**90**	**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 : 5													
Artificial Intelligence of Things Specialisation Core Courses													
TE7279	0705210518	Neural Networks	PC	Artificial Intelligence of Things	3	0	0	0	0	30	45	3	75
TEE7149	0705210519	IoT Programming	PC	Artificial Intelligence of Things	3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 5													
Data Science and Analytics Specialisation Core Courses													
TEE7126	0705210520	Data Warehouse	PC	Data Science and Analytics	3	0	0	0	0	30	45	3	75
T3761	0705210521	Data Mining	PC	Data Science and Analytics	3	0	0	0	0	30	45	3	75
				Total	**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 5													
Cloud Computing Specialisation Core Courses													
TEE7168	0705210522	Virtualization Techniques in Cloud Storage: Principles and Applications	PC	Cloud Computing	3	0	0	0	0	30	45	3	75
TEE7140	0705210523	Fundamentals of Web Services: Concepts and Practical Applications	PC	Cloud Computing	3	0	0	0	0	30	45	3	75

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Catalog Course Code	Course Code	Course Title	Nature	Specialisation/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	**6**	**0**	**0**	**0**	**0**	**60**	**90**	**6**	**150**
Semester : 6													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
P4824	0705210621	Pattern Recognition	PC	Artificial Intelligence and Machine Learning	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 6													
Cyber Security Specialisation Core Courses													
P5375	0705210622	Cryptography and Network Security	PC	Cyber Security	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 6													
Artificial Intelligence of Things Specialisation Core Courses													
P5376	0705210623	IoT Sensors & Actuators	PC	Artificial Intelligence of Things	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 6													

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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		
Data Science and Analytics Specialisation Core Courses													
P5377	0705210624	Data Analysis and Visualization	PC	Data Science and Analytics	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 6													
Cloud Computing Specialisation Core Courses													
P5378	0705210625	Cloud Security	PC	Cloud Computing	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 7													
Artificial Intelligence and Machine Learning Specialisation Core Courses													
P5379	0705210722	Deep Learning and Its Applications	PC	Artificial Intelligence and Machine Learning	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 7													
Cyber Security Specialisation Core Courses													
P5380	0705210723	Intrusion Detection and Prevention System	PC	Cyber Security	3	0	2	15	10	30	45	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
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**
Semester : 7													
Artificial Intelligence of Things Specialisation Core Courses													
P5396	0705210724	Wireless Technologies for IoT	PC	Artificial Intelligence of Things	3	0	2	0	0	40	60	4	100
				Total	**3**	**0**	**2**	**0**	**0**	**40**	**60**	**4**	**100**
Semester : 7													
Data Science and Analytics Specialisation Core Courses													
P5381	0705210725	Big Data Analytics	PC	Data Science and Analytics	3	0	2	0	0	40	60	4	100
				Total	**3**	**0**	**2**	**0**	**0**	**40**	**60**	**4**	**100**
Semester : 7													
Cloud Computing Specialisation Core Courses													
P5382	0705210726	Machine Learning with Web Services	PC	Cloud Computing	3	0	2	15	10	30	45	4	100
				Total	**3**	**0**	**2**	**15**	**10**	**30**	**45**	**4**	**100**

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Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Artificial Intelligence and Machine Learning				
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	4	4	100
Semester 7	0	4	4	100
Total	**0**	**20**	**20**	**500**
Cyber Security				
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	4	4	100
Semester 7	0	4	4	100
Total	**0**	**20**	**20**	**500**
Artificial Intelligence of Things				
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	4	4	100
Semester 7	0	4	4	100
Total	**0**	**20**	**20**	**500**
Data Science and Analytics				
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	4	4	100
Semester 7	0	4	4	100

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Total	**0**	**20**	**20**	**500**
Cloud Computing				
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	4	4	100
Semester 7	0	4	4	100
Total	**0**	**20**	**20**	**500**