



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

1. OBJECTIVE	<p>B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities & 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.</p>			
2. DURATION (IN MONTHS)	48 (Full Time)			
3. INTAKE	60			
4. RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)
		15	7.5	3
	II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)
		2		15
5. ELIGIBILITY	<p>Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.</p> <p>B. Tech (Lateral entry to second year) :</p> <p>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.</p> <p>b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) and passed XII standard with mathematics as a subject.</p> <p>c) Provided that in case of students belonging to B. Sc. Stream, shall clear the subjects of Engineering Graphics / Engineering Drawing and Engineering Mechanics of the first year Engineering program along with the second year subjects.</p> <p>d) Provided further that, the students belonging to B. Sc. Stream shall be considered only after filling the supernumerary seats in this category with students belonging to the Diploma stream.</p> <p>e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc. Degree from a recognized University as defined by UGC, shall also be eligible for admission to</p>			



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

		the first year Engineering Degree courses subject to vacancies in the first year class in case the vacancies at lateral entry are exhausted. However the admissions shall be based strictly on the eligibility criteria as mentioned in a, b, c, and d above.			
6.	SELECTION PROCEDURE	Merit list by valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Maharashtra Common Entrance Test (MHT-CET)			
7.	MEDIUM OF INSTRUCTION	English			
8.	PROGRAMME PATTERN	Semester			
9.	COURSE & SPECIALIZATION	<p>Annexure A: Bachelor of Technology (Civil Engineering) Students may pursue optional 'Honours' OR 'Minor' specialization in one of the specialization areas by completing additional 20 credits in Semester: 5, 6 and 7 as specified in Annexure B for Honours and Annexure C for Minor in the respective specialization area.</p> <p>Annexure B: Optional 'Honours' specialization area</p> <ol style="list-style-type: none"> 1. Environmental Hydraulics 2. Geo-Environmental Engineering 3. GIS and Surveying Technology 4. Infrastructure Engineering and Management 5. Smart Cities and Urban Analytics 6. Structural Engineering <p>Annexure C : Optional 'Minor' specialization area</p> <ol style="list-style-type: none"> 1. Artificial Intelligence and Machine learning (CSE) 2. Data Science (CSE) 3. Internet of things (CSE) 4. Embedded Systems (E&TC) 5. Automobile Engineering with Hybrid and Autonomous Technology (ME) 			
10.	FEE		Academic Fee p.a	Institute Deposit	Total
		Indian Students	260000	20000	280000
		International Students (USD equivalent to INR)	390000	20000	410000
11.	ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.			
12.	STANDARD OF PASSING	The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.			
13.	AWARD OF DEGREE/	Bachelor of Technology (Civil Engineering)			

DIPLOMA/ CERTIFICATE	<p>OR</p> <p>Bachelor of Technology (Civil Engineering) with Honours in Environmental Hydraulics / Geo-Environmental Engineering / GIS and Surveying Technology / Infrastructure Engineering and Management / Smart Cities and Urban Analytics/ Structural Engineering.</p> <p>OR</p> <p>Bachelor of Technology (Civil Engineering) with Minor in Artificial Intelligence and Machine Learning /Data Science / Internet of Things / Embedded Systems / Automobile Engineering with Hybrid and Autonomous Technology will be awarded at the end of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.</p>
---------------------------------	---

14. CLASSIFICATION OF CREDITS

Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	22	0	0	0	0	0	22
2	21	0	0	0	0	0	21
3	20	2	0	0	0	1*	22
4	23	1	0	0	0	0	24
5	22	0	0	0	0	1*	22
6	12	9	0	0	3	0	24
7	6	12	0	0	3	0	21
8	14	0	0	0	0	0	14
Total	140	24	0	0	6	0	170
Optional Additional Courses (Honours)							
Total	0	0			0	0	20
Optional Additional Courses (Minor)							
Total	0	0			0	0	20
Grand Total							190

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

Note: For additional specializations (optional) as applicable, fees of Rs.25000/- will be charged, additionally in the third year

The revised programme structure supersedes the previously approved programme structure dated 09/03/2022 for the programme.

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

Head - Academics

THIS IS SYSTEM GENERATED DOCUMENT AND REQUIRES NO SIGNATURE.



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Semester : 1									
Generic Core Courses									
TE7168	070121101	Engineering Mathematics -I		4	40	60	0	0	100
T7540	070121102	Basic Electrical and Electronics Engineering		3	30	45	0	0	75
T7381	070121103	Chemistry		3	30	45	0	0	75
T7414	070121104	Engineering Mechanics		3	30	45	0	0	75
T7924	070121105	Engineering Graphics		2	0	0	20	30	50
TE7286	070121106	Programming and Problem Solving		2	20	30	0	0	50
T7593	070121107	Basic Electrical and Electronics Engineering Lab		1	0	0	10	15	25
T7382	070121108	Chemistry Lab		1	0	0	10	15	25
T7415	070121109	Engineering Mechanics Lab		1	0	0	10	15	25
T6732	070121110	Critical Thinking		1	25	0	0	0	25
TE7287	070121111	Programming and Problem Solving Lab		1	0	0	10	15	25
Total				22	175	225	60	90	550
Semester : 2									
Generic Core Courses									
TE7169	070121201	Engineering Mathematics -II		4	40	60	0	0	100
T7391	070121202	Physics		3	30	45	0	0	75
TE7178	070121203	Basics of Civil Engineering		3	30	45	0	0	75
T7383	070121204	Communication Skills		2	20	30	0	0	50
TE7188	070121205	Environmental Science		2	20	30	0	0	50
TE7300	070121206	Tinker Lab		2	0	0	50	0	50
T7384	070121207	Communication skills lab		1	0	0	10	15	25
T7392	070121208	Physics lab		1	0	0	10	15	25
TE7179	070121209	Basics of Civil Engineering Lab		1	0	0	10	15	25
TE7396	070121210	Software Tools		1	0	0	25	0	25
T6773	070121211	Creative Thinking		1	25	0	0	0	25
Total				21	165	210	105	45	525
Semester : 3									
Generic Core Courses									
T7957	070121301	Building Construction Technology		3	30	45	0	0	75
TE7170	070121302	Engineering Mathematics-III		3	30	45	0	0	75
TE7199	070121303	Hydrology and Water Resource Engineering		3	30	45	0	0	75
TE7398	070121304	Introduction to Solid Mechanics		3	30	45	0	0	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7400	070121305	Introduction to Fluid Mechanics		3	30	45	0	0	75
TE7181	070121306	Computer Aided Civil Engineering Drawing		2	0	0	50	0	50
T7958	070121307	Building Construction Technology Lab		1	0	0	10	15	25
TE7399	070121308	Introduction to Solid Mechanics Lab		1	0	0	10	15	25
TE7401	070121309	Introduction to Fluid Mechanics Lab		1	0	0	10	15	25
T4005	070121310	Integrated Disaster Management *		0	0	0	0	0	Non Letter Grade
Total				20	150	225	80	45	500
Generic Elective Courses Group									
T6184	070121311	Basic German I		2	50	0	0	0	50
T6186	070121312	Basic French I		2	50	0	0	0	50
T6188	070121313	Basic Spanish I		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Semester : 4									
Generic Core Courses									
T8000	070121401	Service Learning		4	100	0	0	0	100
T7960	070121402	Statistics, Probability and Numerical Methods		3	30	45	0	0	75
TE7402	070121403	Structural Analysis-I		3	30	45	0	0	75
TE7403	070121404	Geology and Soil Mechanics		3	30	45	0	0	75
TE7404	070121405	Open Channel Flow		3	30	45	0	0	75
T7966	070121406	Advanced Surveying Lab		2	0	0	20	30	50
TE7290	070121407	Project Based Learning -I		2	50	0	0	0	50
T2646	070121408	Entrepreneurship Venture		1	25	0	0	0	25
T7963	070121409	Geology & Soil Mechanics Lab		1	0	0	10	15	25
TE7405	070121410	Open Channel Flow Lab		1	0	0	10	15	25
Total				23	295	180	40	60	575
Generic Elective Courses Group									
T6761	070121411	Foundation of Ethics		1	25	0	0	0	25
T6760	070121412	Introduction to Indian Philosophy		1	25	0	0	0	25
Total Required Credits				1	25	0	0	0	25



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Semester : 5									
Generic Core Courses									
T7416	070121501	Environmental Engineering I		3	30	45	0	0	75
F7027	070121502	Highway Engineering Practices and Innovation		3	75	0	0	0	75
TE7406	070121503	Structural Analysis-II		3	30	45	0	0	75
TE7408	070121504	Structural Design-I		3	30	45	0	0	75
T6749	070121505	Design Thinking		2	50	0	0	0	50
TE7291	070121506	Project Based Learning-II		2	50	0	0	0	50
TE7407	070121507	Quantity Surveying and Valuation		2	0	0	20	30	50
T6774	070121508	Principles of Economics		2	50	0	0	0	50
T7417	070121509	Environmental Engineering I Lab		1	0	0	10	15	25
T7440	070121510	Structural Design I Lab.		1	0	0	10	15	25
TH4272	070121541	Certificate in COVID-19 Care for the Community *		0	0	0	0	0	Non Letter Grade
Total				22	315	135	40	60	550
Semester : 6									
Generic Core Courses									
T7419	070121601	Environmental Engineering II		3	30	45	0	0	75
F7039	070121602	Innovations in Construction Project Management		3	75	0	0	0	75
TE7410	070121603	Structural Design-II		3	30	45	0	0	75
T7802	070121604	Capstone Course		2	50	0	0	0	50
F7040	070121605	Innovations in Construction Project Management Lab		1	0	0	25	0	25
Total				12	185	90	25	0	300
Generic Elective Courses Group- I									
TE7224	070121606	Soil Mechanics II		4	40	60	0	0	100
TE7409	070121607	Bridge Engineering		4	40	60	0	0	100
T7975	070121608	Green Building Technology		4	40	60	0	0	100
TE7411	070121609	Airport Planning and Design		4	40	60	0	0	100
TE7412	070121610	Introduction to Remote Sensing and GIS		4	40	60	0	0	100
TE7189	070121611	Environmental Systems		4	40	60	0	0	100
TE7221	070121612	Smart Cities and Future Urbanism		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Generic Elective Courses Group- II									
T7980	070121613	Glass Facade Engineering		3	30	45	0	0	75
TE7413	070121614	Foundation Engineering		3	30	45	0	0	75
TE7414	070121615	Pavement Design		3	30	45	0	0	75
TE7415	070121616	Integrated Water Resource Management		3	30	45	0	0	75
T7984	070121617	Computer Applications in Construction Management		3	30	45	0	0	75
TE7235	070121618	Urban Transport Engineering		3	30	45	0	0	75
TE7416	070121619	Smart Cities Planning and Development		3	30	45	0	0	75
TE7175	070121620	Advanced Structural Analysis		3	30	45	0	0	75
TE7182	070121621	Design of Hydraulic Structures		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group- III									
TE7225	070121622	Soil Mechanics II Lab		1	0	0	10	15	25
TE7191	070121623	Environmental Systems Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Generic Elective Courses Group- IV									
TE7176	070121624	Advanced Structural Analysis Lab		1	0	0	10	15	25
TE7183	070121625	Design of Hydraulic Structures Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Open Elective Courses Group									
T7574	070121626	MATLAB		3	30	45	0	0	75
TE7335	070121627	Introduction to Robotics		3	30	45	0	0	75
TE7339	070121628	Renewable Energy Systems		3	30	45	0	0	75
TE7428	070121629	Introduction to Image Processing		3	30	45	0	0	75
TE7223	070121630	Smart Urban Planning		3	30	45	0	0	75
TE7240	070121631	Water Resource Planning and Management		3	30	45	0	0	75
T7499	070121632	Java		3	30	45	0	0	75
TE7265	070121633	Introduction to Data Science		3	30	45	0	0	75
TE7263	070121634	Introduction to AI and Machine Learning		3	30	45	0	0	75
TE7388	070121635	Quality Management Techniques		3	30	45	0	0	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7319	070121636	Electrical and Electronics Materials		3	30	45	0	0	75
TE7351	070121637	3D Printing and Prototyping		3	30	45	0	0	75
TE7387	070121638	Project Management		3	30	45	0	0	75
TE7698	070121639	Nanotechnology		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Generic Core Courses									
T7804	070121701	B.Tech Project		4	0	0	40	60	100
T7674	070121702	Cyber Security		2	50	0	0	0	50
Total				6	50	0	40	60	150
Generic Elective Courses Group- I									
T2585	070121703	Organizational Behaviour		2	50	0	0	0	50
TE7438	070121704	History of Science and Technology		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Generic Elective Courses Group- II									
TE7212	070121705	Port and Harbor Engineering		3	30	45	0	0	75
TE7238	070121706	Water and Air Quality Modelling		3	30	45	0	0	75
TE7417	070121707	Advanced Concrete Technology		3	30	45	0	0	75
TE7418	070121708	Geoinformatics Application for Emergency Response Management		3	30	45	0	0	75
T7955	070121709	Professional Practices in Construction		3	30	45	0	0	75
TE7216	070121710	Project Management in Smart Cities		3	30	45	0	0	75
TE7219	070121711	Rock Mechanics		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group- III									
TE7231	070121712	Sustainable Construction Methods		3	30	45	0	0	75
TE7419	070121713	Introduction to Finite Element Methods		3	30	45	0	0	75
TE7420	070121714	Environmental Geotechniques		3	30	45	0	0	75
TE7421	070121715	Environmental Impact Assessment		3	30	45	0	0	75
TE7422	070121716	Traffic Engineering		3	30	45	0	0	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7423	070121717	Optimization in Civil Engineering		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group- IV									
TE7424	070121718	Water Power Engineering		3	30	45	0	0	75
TE7214	070121719	Pre-stressed Concrete Structure		3	30	45	0	0	75
T7952	070121720	Waste Management Systems		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group- V									
TE7215	070121721	Prestressed Concrete Structure Lab		1	0	0	10	15	25
TE7239	070121722	Water Power Engineering Lab		1	0	0	10	15	25
TE7237	070121723	Waste Management System Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Open Elective Courses Group									
TE7171	070121724	Introduction to Mathematical Modelling		3	30	45	0	0	75
TE7195	070121725	GIS Applications		3	30	45	0	0	75
TE7203	070121726	Intelligent Transportation Management		3	30	45	0	0	75
T7584	070121727	Printed Circuit Board (PCB) Design		3	30	45	0	0	75
T7650	070121728	Six sigma		3	30	45	0	0	75
TE7700	070121729	Smart Materials		3	30	45	0	0	75
T7474	070121730	Basics of Database		3	30	45	0	0	75
T7616	070121731	Fundamentals of Automotive Technology		3	30	45	0	0	75
T7529	070121732	Machine Learning		3	30	45	0	0	75
TE7756	070121733	Open Source Technologies		3	30	45	0	0	75
TE7264	070121734	Introduction to BIGDATA		3	30	45	0	0	75
TE7334	070121735	Introduction to Mechatronics		3	30	45	0	0	75
TE7338	070121736	Principles of Modern Communication Systems		3	30	45	0	0	75
TE7376	070121737	Introduction to Operations Research		3	30	45	0	0	75
TE7377	070121738	Introduction to Optimisation		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Semester : 8									
Generic Core Courses									
T7912	070121801	Internship		12	0	0	120	180	300
T7802	070121802	Seminar		2	0	0	50	0	50
Total				14	0	0	170	180	350



Celebrating 50 Years of Excellence

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23
Annexure A

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	1	21	22	550
Semester 2	4	17	21	525
Semester 3	2	20	22	550
Semester 4	6	18	24	600
Semester 5	7	15	22	550
Semester 6	6	18	24	600
Semester 7	4	17	21	525
Semester 8	14	0	14	350
Total	44	126	170	4250



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Semester : 5									
Environmental Hydraulics Specialization Core Courses									
TE7185	070121511	Environmental Fluid Mechanics		3	30	45	0	0	75
TE7241	070121512	Water Resources Field Methods		3	30	45	0	0	75
TE7242	070121513	Water Resources Field Methods Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 5									
Geo-Environmental Engineering Specialization Core Courses									
TE7190	070121514	Environmental Systems		3	30	45	0	0	75
TE7229	070121515	Structural Geology		3	30	45	0	0	75
TE7230	070121516	Structural Geology Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 5									
GIS and Surveying Technology Specialization Core Courses									
TE7184	070121517	Digital Image Processing in GIS		3	30	45	0	0	75
TE7196	070121518	Global Navigation Satellite Systems		3	30	45	0	0	75
TE7197	070121519	Global Navigation Satellite Systems Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 5									
Infrastructure Engineering and Management Specialization Core Courses									
TE7236	070121520	Urban Transportation Planning		3	30	45	0	0	75
TE7201	070121521	Infrastructure Planning and Design		3	30	45	0	0	75
TE7202	070121522	Infrastructure Planning and Design Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 5									
Smart Cities and Urban Analytics Specialization Core Courses									
TE7220	070121523	Smart Cities : Context Policy and Governance		3	30	45	0	0	75



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7206	070121524	IOT for Smart Cities		3	30	45	0	0	75
TE7207	070121525	IOT for Smart Cities Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 5									
Structural Engineering Specialization Core Courses									
TE7213	070121526	Prestressed Concrete		3	30	45	0	0	75
TE7208	070121527	Modelling and Analysis of Uncertainty		3	30	45	0	0	75
TE7209	070121528	Modelling and Analysis of Uncertainty Lab		1	0	0	10	15	25
Total				7	60	90	10	15	175
Semester : 6									
Environmental Hydraulics Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50
Total				4	0	0	100	0	100
Specialization Elective : Environmental Hydraulics									
TE7211	070121642	Pipeline Engineering		3	30	45	0	0	75
TE7218	070121643	River Engineering		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 6									
Geo-Environmental Engineering Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50
Total				4	0	0	100	0	100
Specialization Elective : Geo-Environmental Engineering									
TE7187	070121644	Environmental Laws and Policy		3	30	45	0	0	75
TE7194	070121645	Geotechnical Design		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 6									
GIS and Surveying Technology Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7227	070121646	Spatial Modelling and Analysis		3	30	45	0	0	75
Total				7	30	45	100	0	175
Semester : 6									
Infrastructure Engineering and Management Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50
Total				4	0	0	100	0	100
Specialization Elective : Infrastructure Engineering and Management									
TE7217	070121647	Public Transportation Systems		3	30	45	0	0	75
TE7210	070121648	Pavement Materials		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 6									
Smart Cities and Urban Analytics Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50
TE7177	070121649	Application of Sensor Technology to Smart Cities		3	30	45	0	0	75
Total				7	30	45	100	0	175
Semester : 6									
Structural Engineering Specialization Core Courses									
T7802	070121640	Specialization Project		2	0	0	50	0	50
T7802	070121641	Specialization Seminar		2	0	0	50	0	50
TE7228	070121650	Structural Analysis by Matrix Methods		3	30	45	0	0	75
Total				7	30	45	100	0	175
Semester : 7									
Environmental Hydraulics Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75
Total				3	0	0	30	45	75
Specialization Elective : Environmental Hydraulics									
TE7198	070121740	Hydraulic Modelling		3	30	45	0	0	75
TE7180	070121741	Basics of Computational Methods		3	30	45	0	0	75



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Geo-Environmental Engineering Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75
Total				3	0	0	30	45	75
Specialization Elective : Geo-Environmental Engineering									
TE7226	070121742	Solid and Hazardous Waste Management		3	30	45	0	0	75
TE7186	070121743	Environmental Geotechnology		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
GIS and Surveying Technology Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75
Total				3	0	0	30	45	75
Specialization Elective : GIS and Surveying Technology									
TE7193	070121744	Geoinformatics Applications in Natural Resource Management		3	30	45	0	0	75
TE7205	070121745	Intelligent Transportation Systems		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Infrastructure Engineering and Management Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75
Total				3	0	0	30	45	75
Specialization Elective : Infrastructure Engineering and Management									
TE7205	070121745	Intelligent Transportation Systems		3	30	45	0	0	75
TE7233	070121746	Transportation Economics		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Smart Cities and Urban Analytics Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure B
Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Total				3	0	0	30	45	75
Specialization Elective : Smart Cities and Urban Analytics									
TE7205	070121745	Intelligent Transportation Systems		3	30	45	0	0	75
TE7234	070121747	Urban Hydrology and Hydraulics		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Structural Engineering									
Specialization Core Courses									
T7803	070121739	Specialization Project		3	0	0	30	45	75
Total				3	0	0	30	45	75
Specialization Elective : Structural Engineering									
TE7200	070121748	Industrial Structures		3	30	45	0	0	75
TE7232	070121749	System Engineering and Economics		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23
Annexure B
Optional 'Honours' Specialization

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Environmental Hydraulics				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500
Geo-Environmental Engineering				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500
GIS and Surveying Technology				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500
Infrastructure Engineering and Management				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500
Smart Cities and Urban Analytics				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500
Structural Engineering				
Semester 5	0	7	7	175
Semester 6	4	3	7	175
Semester 7	0	6	6	150
Total	4	16	20	500



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure C
Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Semester : 5									
Artificial Intelligence and Machine Learning Specialization Core Courses									
TE7273	070121529	Machine Learning: Classification		3	30	45	0	0	75
TE7274	070121530	Machine Learning: Regression		3	30	45	0	0	75
Total				6	60	90	0	0	150
Semester : 5									
Data Science Specialization Core Courses									
TE7281	070121531	Open Source Tools for Data Science		4	40	60	0	0	100
TE7292	070121532	R Programming		3	30	45	0	0	75
Total				7	70	105	0	0	175
Semester : 5									
Internet of Things Specialization Core Courses									
TE7268	070121533	Introduction to IOT		4	40	60	0	0	100
TE7293	070121534	Raspberry Pi and Python		3	30	45	0	0	75
Total				7	70	105	0	0	175
Semester : 5									
Embedded Systems Specialization Core Courses									
T7801	070121535	Specialization Project		1	0	0	10	15	25
T7802	070121536	Specialization Seminar		2	0	0	20	30	50
TE7298	070121537	System Programming		4	40	60	0	0	100
Total				7	40	60	30	45	175
Semester : 5									
Automobile Engineering with Hybrid and Autonomous Technology Specialization Core Courses									
TE7355	070121538	Basics of Automotive Engineering		3	30	45	0	0	75
T3276	070121539	Digital Electronics		2	50	0	0	0	50
T7928	070121540	Automotive Engineering Lab		1	0	0	10	15	25
Total				6	80	45	10	15	150
Semester : 6									
Artificial Intelligence and Machine Learning Specialization Core Courses									



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure C
Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
TE7266	070121651	Introduction to Deep Learning		4	40	60	0	0	100
TE7271	070121652	Machine Learning Clustering and Retrieval		3	30	45	0	0	75
Total				7	70	105	0	0	175
Semester : 6									
Data Science									
Specialization Core Courses									
TE7247	070121653	Business Analytics		3	30	45	0	0	75
TE7284	070121654	Power BI		3	30	45	0	0	75
Total				6	60	90	0	0	150
Semester : 6									
Internet of Things									
Specialization Core Courses									
TE7269	070121655	IOT Security and Privacy		3	30	45	0	0	75
TE7295	070121656	Software Defined Networking		3	30	45	0	0	75
Total				6	60	90	0	0	150
Semester : 6									
Embedded Systems									
Specialization Core Courses									
T7802	070121657	Specialization Project		2	0	0	20	30	50
TE7325	070121658	Embedded Linux		4	40	60	0	0	100
Total				6	40	60	20	30	150
Semester : 6									
Automobile Engineering with Hybrid and Autonomous Technology									
Specialization Core Courses									
TE7669	070121659	Hybrid Technology		2	20	30	0	0	50
F7036	070121660	Autonomous Technology (Self Driven Cars)		2	50	0	0	0	50
TE7435	070121661	Automotive Engine and Transmission System		3	30	45	0	0	75
Total				7	100	75	0	0	175
Semester : 7									
Artificial Intelligence and Machine Learning									
Specialization Core Courses									
T7805	070121750	Specialization Project		5	0	0	50	75	125
T7802	070121751	Specialization Seminar		2	0	0	20	30	50
Total				7	0	0	70	105	175
Semester : 7									



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure C
Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Specialization	Credits	Internal Marks	External Mark	Internal Practical Marks	External Practical Marks	Total Marks
Data Science									
Specialization Core Courses									
T7805	070121750	Specialization Project		5	0	0	50	75	125
T7802	070121751	Specialization Seminar		2	0	0	20	30	50
Total				7	0	0	70	105	175
Semester : 7									
Internet of Things									
Specialization Core Courses									
T7805	070121750	Specialization Project		5	0	0	50	75	125
T7802	070121751	Specialization Seminar		2	0	0	20	30	50
Total				7	0	0	70	105	175
Semester : 7									
Embedded Systems									
Specialization Core Courses									
T7802	070121752	Specialization Project		2	0	0	20	30	50
TE7304	070121753	Advanced Microcontrollers and RTOS		4	40	60	0	0	100
TE7305	070121754	Advanced Microcontrollers and RTOS Lab		1	0	0	10	15	25
Total				7	40	60	30	45	175
Semester : 7									
Automobile Engineering with Hybrid and Autonomous Technology									
Specialization Core Courses									
T7805	070121750	Specialization Project		5	0	0	50	75	125
T7802	070121751	Specialization Seminar		2	0	0	20	30	50
Total				7	0	0	70	105	175



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23
Annexure C
Optional 'Minor' Specialization

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Artificial Intelligence and Machine Learning				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500
Data Science				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Internet of Things				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Embedded Systems				
Semester 5	0	7	7	175
Semester 6	0	6	6	150
Semester 7	0	7	7	175
Total	0	20	20	500
Automobile Engineering with Hybrid and Autonomous Technology				
Semester 5	2	4	6	150
Semester 6	2	5	7	175
Semester 7	0	7	7	175
Total	4	16	20	500