



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>As per Annexure A.</p> <p>Students can pursue additional specialization in the following areas by completing 20 credits specified in the program structure of that specialization beyond the minimum requirement for the award of degree.</p> <ul style="list-style-type: none"> - GIS and Surveying Technology - Infrastructure Engineering and Management - Environmental Hydraulics - Geo-Environmental Engineering - Structural Engineering - Smart Cities and Urban Analytics 			
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/ DIPLOMA/ CERTIFICATE	Bachelor of Technology (Civil Engineering) 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.			

14. NATURE WISE DISTRIBUTION 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	0	22
6	12	12	0	0	0	0	24
7	6	15	0	0	0	0	21
8	14	0	0	0	0	0	14
Total	140	30	0	0	0	0	170
Optional Additional Courses							
Total	0	0	11	9	0	0	20
Grand Total							190

* Satisfactory completion of the non letter grade course 'Integrated Disaster Management' 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 09/10/2019 for the programme.

Programme Structure is approved by the Academic Council subject to its norms & conditions. Any provision in the Programme Structure which violates the basic rules & regulations is deemed to be termed "Null & Void".

Head-Academics

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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



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

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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

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Semester : 5									
Generic Core Courses									
T7416	070121501	Environmental Engineering I		3	30	45	0	0	75
F0003	070121502	Flexi-Credit Course		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
Total				22	315	135	40	60	550
Specialization Core Courses for Optional Additional Specialization : Environmental Hydraulics (Major)									
T7802	070121511	Project Phase - I	Environmental Hydraulics	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Geo-Environmental Engineering (Major)									
T7802	070121511	Project Phase - I	Geo-Environmental Engineering	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : GIS and Surveying Technology (Major)									
T7802	070121511	Project Phase - I	GIS and Surveying Technology	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Infrastructure Engineering and Management (Major)									
T7802	070121511	Project Phase - I	Infrastructure Engineering and Management	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Smart Cities and Urban Analytics (Major)									
T7802	070121511	Project Phase - I	Smart Cities and Urban Analytics	2	0	0	30	20	50
Total				2	0	0	30	20	50



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
Specialization Core Courses for Optional Additional Specialization : Structural Engineering (Major)									
T7802	070121511	Project Phase - I	Structural Engineering	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Elective : Infrastructure Engineering and Management									
TE7236	070121520	Urban Transportation Planning	Infrastructure Engineering and Management	3	30	45	0	0	75
TE7217	070121521	Public Transportation Systems	Infrastructure Engineering and Management	3	30	45	0	0	75
TE7210	070121522	Pavement Materials	Infrastructure Engineering and Management	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Specialization Elective : Environmental Hydraulics									
TE7185	070121512	Environmental Fluid Mechanics	Environmental Hydraulics	3	30	45	0	0	75
TE7211	070121513	Pipeline Engineering	Environmental Hydraulics	3	30	45	0	0	75
TE7218	070121514	River Engineering	Environmental Hydraulics	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Specialization Elective : GIS and Surveying Technology									
TE7184	070121518	Digital Image Processing in GIS	GIS and Surveying Technology	3	30	45	0	0	75
TE7227	070121519	Spatial Modelling and Analysis	GIS and Surveying Technology	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Specialization Elective : Geo-Environmental Engineering									
TE7187	070121515	Environmental Laws and Policy	Geo-Environmental Engineering	3	30	45	0	0	75
TE7190	070121516	Environmental Systems	Geo-Environmental Engineering	3	30	45	0	0	75



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

Annexure A

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TE7194	070121517	Geotechnical Design	Geo-Environmental Engineering	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Specialization Elective : Structural Engineering									
TE7228	070121525	Structural Analysis by Matrix Methods	Structural Engineering	3	30	45	0	0	75
TE7213	070121526	Prestressed Concrete	Structural Engineering	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Specialization Elective : Smart Cities and Urban Analytics									
TE7177	070121523	Application of Sensor Technology to Smart Cities	Smart Cities and Urban Analytics	3	30	45	0	0	75
TE7220	070121524	Smart Cities : Context Policy and Governance	Smart Cities and Urban Analytics	3	30	45	0	0	75
Total Required Credits				6	60	90	0	0	150
Semester : 6									
Generic Core Courses									
T7419	070121601	Environmental Engineering II		3	30	45	0	0	75
F0003	070121602	Flexi-Credit Course		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
F0001	070121605	Flexi-Credit Course		1	0	0	25	0	25
Total				12	185	90	25	0	300
Specialization Core Courses for Optional Additional Specialization : Environmental Hydraulics (Major)									
TE7241	070121606	Water Resources Field Methods	Environmental Hydraulics	3	30	45	0	0	75
T7803	070121607	Project Phase II	Environmental Hydraulics	3	0	0	30	45	75
TE7242	070121608	Water Resources Field Methods Lab	Environmental Hydraulics	1	0	0	25	0	25
Total				7	30	45	55	45	175
Specialization Core Courses for Optional Additional Specialization : Geo-Environmental Engineering (Major)									
T7803	070121607	Project Phase II	Geo-Environmental Engineering	3	0	0	30	45	75



Celebrating 50 Years of Excellence

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

Annexure A

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TE7229	070121609	Structural Geology	Geo-Environmental Engineering	3	30	45	0	0	75
TE7230	070121610	Structural Geology Lab	Geo-Environmental Engineering	1	0	0	25	0	25
Total				7	30	45	55	45	175
Specialization Core Courses for Optional Additional Specialization : GIS and Surveying Technology (Major)									
T7803	070121607	Project Phase II	GIS and Surveying Technology	3	0	0	30	45	75
TE7196	070121611	Global Navigation Satellite Systems	GIS and Surveying Technology	3	30	45	0	0	75
TE7197	070121612	Global Navigation Satellite Systems Lab	GIS and Surveying Technology	1	0	0	25	0	25
Total				7	30	45	55	45	175
Specialization Core Courses for Optional Additional Specialization : Infrastructure Engineering and Management (Major)									
T7803	070121607	Project Phase II	Infrastructure Engineering and Management	3	0	0	30	45	75
TE7201	070121613	Infrastructure Planning and Design	Infrastructure Engineering and Management	3	30	45	0	0	75
TE7202	070121614	Infrastructure Planning and Design Lab	Infrastructure Engineering and Management	1	0	0	25	0	25
Total				7	30	45	55	45	175
Specialization Core Courses for Optional Additional Specialization : Smart Cities and Urban Analytics (Major)									
T7803	070121607	Project Phase II	Smart Cities and Urban Analytics	3	0	0	30	45	75
TE7206	070121615	IOT for Smart Cities	Smart Cities and Urban Analytics	3	30	45	0	0	75
TE7207	070121616	IOT for Smart Cities Lab	Smart Cities and Urban Analytics	1	0	0	25	0	25
Total				7	30	45	55	45	175
Specialization Core Courses for Optional Additional Specialization : Structural Engineering (Major)									



Celebrating 50 Years of Excellence

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

Annexure A

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TE7208	070121617	Modelling and Analysis of Uncertainty	Structural Engineering	3	30	45	0	0	75
T7803	070121618	Project Phase - II	Structural Engineering	3	0	0	30	45	75
TE7209	070121619	Modelling and Analysis of Uncertainty Lab	Structural Engineering	1	0	0	25	0	25
Total				7	30	45	55	45	175
Generic Elective Courses Group									
TE7224	070121620	Soil Mechanics II		4	40	60	0	0	100
TE7409	070121621	Bridge Engineering		4	40	60	0	0	100
T7975	070121622	Green Building Technology		4	40	60	0	0	100
TE7411	070121623	Airport Planning and Design		4	40	60	0	0	100
TE7412	070121624	Introduction to Remote Sensing and GIS		4	40	60	0	0	100
TE7189	070121625	Environmental Systems		4	40	60	0	0	100
TE7221	070121626	Smart Cities and Future Urbanism		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100
Generic Elective Courses Group									
T7980	070121627	Glass Facade Engineering		3	30	45	0	0	75
TE7413	070121628	Foundation Engineering		3	30	45	0	0	75
TE7414	070121629	Pavement Design		3	30	45	0	0	75
TE7415	070121630	Integrated Water Resource Management		3	30	45	0	0	75
T7984	070121631	Computer Applications in Construction Management		3	30	45	0	0	75
TE7235	070121632	Urban Transport Engineering		3	30	45	0	0	75
TE7416	070121633	Smart Cities Planning and Development		3	30	45	0	0	75
TE7175	070121634	Advanced Structural Analysis		3	30	45	0	0	75
TE7182	070121635	Design of Hydraulic Structures		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group									
TE7225	070121636	Soil Mechanics II Lab		1	0	0	10	15	25
TE7191	070121637	Environmental Systems Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25



Celebrating 50 Years of Excellence

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

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Generic Elective Courses Group									
TE7176	070121638	Advanced Structural Analysis Lab		1	0	0	10	15	25
TE7183	070121639	Design of Hydraulic Structures Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Generic Elective Courses Group (Major)									
T7574	070121640	MATLAB		3	30	45	0	0	75
TE7335	070121641	Introduction to Robotics		3	30	45	0	0	75
TE7339	070121642	Renewable Energy Systems		3	30	45	0	0	75
TE7428	070121643	Introduction to Image Processing		3	30	45	0	0	75
TE7223	070121644	Smart Urban Planning		3	30	45	0	0	75
TE7240	070121645	Water Resource Planning and Management		3	30	45	0	0	75
T7499	070121646	Java		3	30	45	0	0	75
TE7265	070121647	Introduction to Data Science		3	30	45	0	0	75
TE7263	070121648	Introduction to AI and Machine Learning		3	30	45	0	0	75
TE7388	070121649	Quality Management Techniques		3	30	45	0	0	75
TE7319	070121650	Electrical and Electronics Materials		3	30	45	0	0	75
TE7351	070121651	3D Printing and Prototyping		3	30	45	0	0	75
TE7387	070121652	Project Management		3	30	45	0	0	75
T7020	070121653	Nanotechnology		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Generic Core Courses									
T7804	070121701	Project		4	0	0	40	60	100
T7674	070121702	Cyber Security		2	50	0	0	0	50
Total				6	50	0	40	60	150
Specialization Core Courses for Optional Additional Specialization : Environmental Hydraulics (Major)									
T7802	070121703	Seminar	Environmental Hydraulics	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Geo-Environmental Engineering (Major)									
T7802	070121703	Seminar	Geo-Environmental Engineering	2	0	0	30	20	50



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Bachelor of Technology (Civil Engineering)
Programme Structure 2019-23

Annexure A

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Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : GIS and Surveying Technology (Major)									
T7802	070121703	Seminar	GIS and Surveying Technology	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Infrastructure Engineering and Management (Major)									
T7802	070121703	Seminar	Infrastructure Engineering and Management	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Smart Cities and Urban Analytics (Major)									
T7802	070121703	Seminar	Smart Cities and Urban Analytics	2	0	0	30	20	50
Total				2	0	0	30	20	50
Specialization Core Courses for Optional Additional Specialization : Structural Engineering (Major)									
T7802	070121703	Seminar	Structural Engineering	2	0	0	30	20	50
Total				2	0	0	30	20	50
Generic Elective Courses Group									
T2585	070121704	Organizational Behaviour		2	50	0	0	0	50
TE7438	070121705	History of Science and Technology		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Generic Elective Courses Group									
TE7212	070121706	Port and Harbor Engineering		3	30	45	0	0	75
TE7238	070121707	Water and Air Quality Modelling		3	30	45	0	0	75
TE7417	070121708	Advanced Concrete Technology		3	30	45	0	0	75
TE7418	070121709	Geoinformatics Application for Emergency Response Management		3	30	45	0	0	75
T7955	070121710	Professional Practices in Construction		3	30	45	0	0	75
TE7216	070121711	Project Management in Smart Cities		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
TE7219	070121712	Rock Mechanics		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group									
TE7231	070121713	Sustainable Construction Methods		3	30	45	0	0	75
TE7419	070121714	Introduction to Finite Element Methods		3	30	45	0	0	75
TE7420	070121715	Environmental Geotechniques		3	30	45	0	0	75
TE7421	070121716	Environmental Impact Assessment		3	30	45	0	0	75
TE7422	070121717	Traffic Engineering		3	30	45	0	0	75
TE7423	070121718	Optimization in Civil Engineering		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group									
TE7424	070121719	Water Power Engineering		3	30	45	0	0	75
TE7214	070121720	Prestressed Concrete Structure		3	30	45	0	0	75
T7952	070121721	Waste Management Systems		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Generic Elective Courses Group									
TE7215	070121722	Prestressed Concrete Structure Lab		1	0	0	10	15	25
TE7239	070121723	Water Power Engineering Lab		1	0	0	10	15	25
TE7237	070121724	Waste Management System Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Generic Elective Courses Group									
TE7171	070121725	Introduction to Mathematical Modelling		3	30	45	0	0	75
TE7195	070121726	GIS Applications		3	30	45	0	0	75
TE7203	070121727	Intelligent Transportation Management		3	30	45	0	0	75
T7584	070121728	Printed Circuit Board (PCB) Design		3	30	45	0	0	75
T7650	070121729	Six sigma		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

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T7394	070121730	Smart Materials		3	30	45	0	0	75
T7474	070121731	Basics of Database		3	30	45	0	0	75
T7616	070121732	Fundamentals of Automotive Technology		3	30	45	0	0	75
T7529	070121733	Machine Learning		3	30	45	0	0	75
T7509	070121734	Open Source Technologies		3	30	45	0	0	75
TE7264	070121735	Introduction to BIGDATA		3	30	45	0	0	75
TE7334	070121736	Introduction to Mechatronics		3	30	45	0	0	75
TE7338	070121737	Principles of Modern Communication Systems		3	30	45	0	0	75
TE7376	070121738	Introduction to Operations Research		3	30	45	0	0	75
TE7377	070121739	Introduction to Optimisation		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : Infrastructure Engineering and Management									
TE7204	070121745	Intelligent Transportation Systems	Infrastructure Engineering and Management	3	30	45	0	0	75
TE7233	070121746	Transportation Economics	Infrastructure Engineering and Management	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : Environmental Hydraulics									
TE7198	070121740	Hydraulic Modelling	Environmental Hydraulics	3	30	45	0	0	75
TE7180	070121741	Basics of Computational Methods	Environmental Hydraulics	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : GIS and Surveying Technology									
TE7193	070121744	Geoinformatics Applications in Natural Resource Management	GIS and Surveying Technology	3	30	45	0	0	75
TE7204	070121745	Intelligent Transportation Systems	GIS and Surveying Technology	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : Geo-Environmental Engineering									



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
TE7226	070121742	Solid and Hazardous Waste Management	Geo-Environmental Engineering	3	30	45	0	0	75
TE7186	070121743	Environmental Geotechnology	Geo-Environmental Engineering	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : Structural Engineering									
TE7200	070121748	Industrial Structures	Structural Engineering	3	30	45	0	0	75
TE7232	070121749	System Engineering and Economics	Structural Engineering	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Specialization Elective : Smart Cities and Urban Analytics									
TE7204	070121745	Intelligent Transportation Systems	Smart Cities and Urban Analytics	3	30	45	0	0	75
TE7234	070121747	Urban Hydrology and Hydraulics	Smart Cities and Urban Analytics	3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 8									
Generic Core Courses									
T7912	070121801	Internship		12	0	0	180	120	300
T7802	070121802	Seminar		2	50	0	0	0	50
Total				14	50	0	180	120	350



Celebrating 50 Years of Excellence

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

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	1	21	22	550
Semester 2	4	17	21	525
Semester 3	4	18	22	550
Semester 4	8	16	24	600
Semester 5	9	13	22	550
Semester 6	6	18	24	600
Semester 7	4	17	21	525
Semester 8	2	12	14	350
Total	38	132	170	4250