

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Mechanical Engineering)
Programme Structure 2018-22

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.</p> <p>Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.</p> <p>The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</p>			
2. DURATION (IN MONTHS)	48 (Full Time)			
3. INTAKE	120			
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>			

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		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	As per Annexure A			
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 (Mechanical 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	24	0	0	0	0	0	24
2	24	2	0	0	0	0	26
3	26	2	0	0	0	1*	28
4	28	2	0	0	0	0	30
5	27	0	0	0	0	0	27
6	15	0	0	12	0	0	27
7	10	0	0	11	0	1*	21
8	0	17	0	0	0	0	17
Total	154	23	0	23	0	0	200

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

The revised programme structure supersedes the previously approved programme structure dated 27/11/2020 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

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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									
T7941	070125110	Manufacturing Processes		2	20	30	0	0	50
T7385	070125101	Engineering Mathematics -I		5	50	75	0	0	125
T7391	070125102	Physics		3	30	45	0	0	75
T7392	070125103	Physics lab		1	0	0	10	15	25
T7418	070125104	Environmental & Civil Engineering		3	30	45	0	0	75
T7458	070125105	Environmental & Civil Engineering Lab		1	0	0	10	15	25
T7484	070125106	Computer Programming		2	20	30	0	0	50
T7485	070125107	Computer Programming Lab		1	0	0	10	15	25
T7939	070125108	Engineering Thermodynamics		3	30	45	0	0	75
T7940	070125109	Engineering Thermodynamics Lab		1	0	0	10	15	25
T7658	070125111	Workshop Practice		2	0	0	20	30	50
Total				24	180	270	60	90	600
Semester : 2									
Generic Core Courses									
T7924	070125210	Engineering Graphics		2	20	30	0	0	50
T7943	070125201	Technical English & Communication Skill		2	50	0	0	0	50
T7944	070125202	Technical English & Communication Skill Lab		1	0	0	10	15	25
T7387	070125203	Engineering Mathematics-II		5	50	75	0	0	125
T7381	070125204	Chemistry		3	30	45	0	0	75
T7382	070125205	Chemistry Lab		1	0	0	10	15	25
T7540	070125206	Basic Electrical and Electronics Engineering		3	30	45	0	0	75
T7593	070125207	Basic Electrical and Electronics Engineering Lab		1	0	0	10	15	25
T7414	070125208	Engineering Mechanics		3	30	45	0	0	75
T7415	070125209	Engineering Mechanics Lab		1	0	0	10	15	25
T7925	070125211	Engineering Graphics Lab		2	0	0	20	30	50
Total				24	210	240	60	90	600
Generic Elective Courses Group									
T7946	070125212	Economics for Engineers		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Semester : 3									

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Generic Core Courses									
T7615	070125306	Fluid Mechanics Lab		1	0	0	10	15	25
T7388	070125301	Engineering Mathematics-III		4	40	60	0	0	100
T7656	070125310	Theory of Machines-I Lab		1	0	0	10	15	25
T7635	070125307	Measurement and Metrology		3	30	45	0	0	75
T4005	070125311	Integrated Disaster Management *		0	0	0	0	0	Non Letter Grade
T7652	070125303	Strength of Materials Lab		1	0	0	10	15	25
T7651	070125302	Strength of Materials		4	40	60	0	0	100
T7655	070125309	Theory of Machines-I		4	40	60	0	0	100
T7636	070125308	Measurement and Metrology Lab		1	0	0	10	15	25
T7614	070125305	Fluid Mechanics		4	40	60	0	0	100
T7634	070125304	Material Science		3	30	45	0	0	75
Total				26	220	330	40	60	650
Generic Elective Courses Group									
T6188	070125314	Basic Spanish I		2	50	0	0	0	50
T6186	070125313	Basic French I		2	50	0	0	0	50
T6184	070125312	Basic German I		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Semester : 4									
Generic Core Courses									
TE7059	070125410	Theory of Machines - II		4	40	60	0	0	100
T8000	070125401	Service Learning		4	100	0	0	0	100
T7960	070125402	Statistics, Probability and Numerical Methods		3	30	45	0	0	75
T7961	070125403	Statistics, Probability and Numerical Methods lab		1	0	0	10	15	25
T7629	070125404	Machine drawing and computer graphics lab		2	0	0	20	30	50
T7632	070125405	Manufacturing Technology		3	30	45	0	0	75
T7633	070125406	Manufacturing Technology Lab		1	0	0	10	15	25
T7921	070125407	Machine Design-I		4	40	60	0	0	100
T7699	070125408	Fluid Machinery		4	40	60	0	0	100
T7613	070125409	Fluid Machinery Lab		1	0	0	10	15	25
T7654	070125411	Theory of Machines - II Lab		1	0	0	10	15	25
Total				28	280	270	60	90	700

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Generic Elective Courses Group									
T2353	070125412	Entrepreneurship		2	50	0	0	0	50
Total Required Credits				2	50	0	0	0	50
Semester : 5									
Generic Core Courses									
T7627	070125503	Machine Design - II		4	40	60	0	0	100
T7618	070125506	Heat Transfer		4	40	60	0	0	100
T7619	070125507	Heat Transfer Lab		1	0	0	10	15	25
T7641	070125509	Mechatronics Lab		1	0	0	10	15	25
T7640	070125508	Mechatronics		3	30	45	0	0	75
T7621	070125502	I.C. Engines Lab		1	0	0	10	15	25
T7647	070125510	Production Management		3	30	45	0	0	75
T6274	070125511	Foundations of Ethics		2	50	0	0	0	50
T7606	070125504	CAD& CAM		4	40	60	0	0	100
T7620	070125501	I.C. Engines		3	30	45	0	0	75
T7607	070125505	CAD& CAM Lab		1	0	0	10	15	25
Total				27	260	315	40	60	675
Semester : 6									
Generic Core Courses									
TE7081	070125601	Refrigeration and Airconditioning		3	30	45	0	0	75
TE7060	070125605	Engineering Design Optimization		4	40	60	0	0	100
TE7038	070125606	Project Planning and Charter		2	0	0	20	30	50
T7611	070125604	Finite Element Methods Lab		1	0	0	10	15	25
T7610	070125603	Finite Element Methods		4	40	60	0	0	100
T7649	070125602	Refrigeration & Airconditioning Lab		1	0	0	10	15	25
T7649	070125602	Refrigeration & Airconditioning Lab		1	0	0	10	15	25
Total				16	110	165	50	75	400
Minor									
TE7061	070125607	Mechanical Vibrations	Mechanical Engineering	4	40	60	0	0	100
TE7062	070125609	Jigs and Fixtures		4	40	60	0	0	100
T7608	070125608	Computational Fluid Dynamics		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100

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Specialization Elective : Mechanical Engineering									
TE7064	070125610	Mechanical Vibrations Lab		1	0	0	10	15	25
TE7063	070125612	Jigs and Fixtures Lab		1	0	0	10	15	25
T7686	070125611	Computational Fluid Dynamic Lab		1	0	0	10	15	25
Total Required Credits				1	0	0	10	15	25
Specialization Elective : Mechanical Engineering									
TE7065	070125613	Advanced Strength of Materials		4	40	60	0	0	100
TE7066	070125614	Automobile Engineering		4	40	60	0	0	100
TE7067	070125615	Flexible Manufacturing Systems		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100
Specialization Elective : Mechanical Engineering									
T7574	070125617	MATLAB		3	30	45	0	0	75
T7020	070125618	Nanotechnology		3	30	45	0	0	75
T7499	070125616	Java		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 7									
Generic Core Courses									
T2207	070125701	Operations Research		4	40	60	0	0	100
T7804	070125702	B.Tech Project		4	0	0	40	60	100
T7674	070125703	Cyber Security		2	50	0	0	0	50
TH4272	070125716	Certificate in COVID-19 Care for the Community *		0	0	0	0	0	Non Letter Grade
Total				10	90	60	40	60	250
Specialization Elective : Mechanical Engineering									
T7624	070125704	Industrial Fluid Power		4	40	60	0	0	100
T7622	070125705	Industrial Automation & Robotics		4	40	60	0	0	100
TE7070	070125706	Nature Inspired Optimisation Techniques		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100
Specialization Elective : Mechanical Engineering									
T7645	070125707	Power Plant Engineering		4	40	60	0	0	100
TE7072	070125708	Total Quality Management		4	40	60	0	0	100

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TE7071	070125709	Tribology		4	40	60	0	0	100
Total Required Credits				4	40	60	0	0	100
Specialization Elective : Mechanical Engineering									
T7456	070125710	Town & Country Planning		3	30	45	0	0	75
T7394	070125711	Smart Materials		3	30	45	0	0	75
T7474	070125712	Basics of Database		3	30	45	0	0	75
T7650	070125713	Six sigma		3	30	45	0	0	75
T7584	070125714	Printed Circuit Board (PCB) Design		3	30	45	0	0	75
T7509	070125715	Open Source Technologies		3	30	45	0	0	75
Total Required Credits				3	30	45	0	0	75
Semester : 8									
Plan A									
Generic Elective Courses Group									
T7671	070125802	Seminar		4	0	0	40	60	100
T7912	070125801	Internship		13	0	0	130	195	325
Total Required Credits				17	0	0	170	255	425
Plan B									
Generic Elective Courses Group									
T7905	070125803	Internship(6-8 Weeks)		5	0	0	50	75	125
T7048	070125804	Project Management		4	40	60	0	0	100
TE7069	070125805	Advanced Manufacturing Technology		4	40	60	0	0	100
T7646	070125806	Pressure Vessel Design		4	40	60	0	0	100
Total Required Credits				17	120	180	50	75	425

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	0	24	24	600
Semester 2	4	22	26	650
Semester 3	2	26	28	700
Semester 4	6	24	30	750
Semester 5	2	25	27	675
Semester 6	0	27	27	675
Semester 7	2	19	21	525
Semester 8	0	17	17	425
Total	16	184	200	5000