SYMBIOSIS INSTITUTE OF TECHNOLOGY
BACHELOR OF TECHNOLOGY (MECHANICAL ENGINEERING)
PROGRAMME STRUCTURE 2017-21

1. OBJECTIVE

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.

2. DURATION

Four Years Full Time

3. INTAKE

120 Students

4. RESERVATION

I. Within the sanctioned intake:

a) Scheduled Castes – 15%
b) Scheduled Tribes – 7.5%
c) Differently Able - 3%

II. Over and above the sanctioned intake:

a) Kashmiri Migrants - 2 Seats
b) International Students – 15%

5. ELIGIBILITY

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 (40% in case of candidate belonging to reserved category) in the above subjects taken together.

B. Tech (Lateral entry to second year) :

a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks (40% in case of candidates belonging to reserved category) in appropriate branch of Engineering / Technology.

b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks (40% in case of candidates belonging to reserved category) and passed XII standard with mathematics as a subject.
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.
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.
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 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.

A candidate who has completed qualifying qualification from any Foreign Board / University must obtain an equivalence certificate from Association of Indian Universities (AIU).

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 Pattern - 8 Semesters
9.	**COURSES & SPECIALIZATION**	As per Annexure A
10.	**FEE**	

Indian Students

Academic Fee p.a.	Rs. 2,25,000
Institute Deposit	Rs. 10,000
Total	**Rs. 2,35,000**

International Students

Academic Fee p.a.	Rs. 3,40,000
Institute Deposit	Rs. 10,000
Total	**Rs. 3, 50, 000**

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 (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.

Annexure A
Semester I

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Practical		Examination Scheme Marks		Total Credits	Total Marks
				L	T	Lab	CA	ESE	CA	ESE		
T7385	070125101	Engineering Mathematics I	BS	4	2	-	-	-	50	75	5	125
T7391	070125102	Physics	BS	3	-	-	-	-	30	45	3	75
T7392	070125103	Physics Lab	BS	-	-	2	10	15	-	-	1	25
T7418	070125104	Environmental and Civil Engineering	ES	3	-	-	-	-	30	45	3	75
T7458	070125105	Environmental and Civil Engineering Lab	ES	-	-	2	10	15	-		1	25
T7484	070125106	Computer Programming	ES	2	-	-	-	-	20	30	2	50
T7485	070125107	Computer Programming Lab	ES	-	-	2	10	15	-	-	1	25
T7939	070125108	Engineering Thermodynamics	ES	3	-	-	-	-	30	45	3	75
T7940	070125109	Engineering Thermodynamics Lab	ES	-	-	2	10	15	-	-	1	25
T7941	070125110	Manufacturing Processes	PC	2					20	30	2	50
T7658	070125111	Workshop Practice	ES	-	-	4	20	30	-	-	2	50
		Total		**17**	**2**	**12**	**60**	**90**	**180**	**270**	**24**	**600**

Semester II

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Practical		Examination Scheme Marks		Total Credits	Total Marks
				L	T	Lab	CA	ESE	CA	ESE		
T7943	070125201	Technical English & Communication Skill	MC	2	-	-	-	-	50	-	2	50
T7944	070125202	Technical English & Communication Skill Lab	MC	-	-	2	10	15	-	-	1	25
T7387	070125203	Engineering Mathematics II	BS	4	2	-	-	-	50	75	5	125
T7381	070125204	Chemistry	BS	3	-	-	-	-	30	45	3	75
T7382	070125205	Chemistry Lab	BS	-	-	2	10	15	-	-	1	25
T7540	070125206	Basic Electrical and Electronics Engineering	ES	3	-	-	-	-	30	45	3	75
T7593	070125207	Basic Electrical and Electronics Engineering Lab	ES	-	-	2	10	15	-	-	1	25
T7414	070125208	Engineering Mechanics	ES	3	-	-	-	-	30	45	3	75
T7415	070125209	Engineering Mechanics Lab	ES	-	-	2	10	15	-	-	1	25
T7924	070125210	Engineering Graphics	ES	2	-	-	-	-	20	30	2	50
T7925	070125211	Engineering Graphics Lab	ES	-	-	4	20	30	-	-	2	50
Inter Institute Course I (Choose any one course from 212 to 214)												
T7945	070125212	Law for Engineers	OE	2	-	-	-	-	50	-	2	50
T7946	070125213	Economics for Engineers	OE	2	-	-	-	-	50	-	2	50

T4609	070125214	My Nutrition Guide	OE	2	-	-	-	-	50	-	2	50
		Total		**19**	**2**	**12**	**60**	**90**	**260**	**240**	**26**	**650**

Semester III

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7388	070125301	Engineering Mathematics III	BS	3	2	-	-	-	40	60	4	100
T7651	070125302	Strength of Materials	ES	4	-	-	-	-	40	60	4	100
T7652	070125303	Strength of Materials Lab	ES	-	-	2	10	15	-	-	1	25
T7634	070125304	Material Science	ES	3	-	-	-	-	30	45	3	75
T7614	070125305	Fluid Mechanics	PC	4	-	-	-	-	40	60	4	100
T7615	070125306	Fluid Mechanics Lab	PC	-	-	2	10	15	-	-	1	25
T7635	070125307	Measurement and Metrology	PC	3	-	-	-	-	30	45	3	75
T7636	070125308	Measurement and Metrology Lab	PC	-	-	2	10	15	-	-	1	25
T7926	070125309	Theory of Machines-I	PC	4	-	-	-	-	40	60	4	100
T7656	070125310	Theory of Machines-I Lab	PC	-	-	2	10	15	-	-	1	25
Liberal Arts(Choose any one from the following)												
T6184	070125311	Basic German-I	MC	**2**	**-**	**-**	**-**	**-**	**50**	**-**	**2**	**50**
T6186	070125312	Basic French-I	MC	**2**	**-**	**-**	**-**	**-**	**50**	**-**	**2**	**50**
T6188	070125313	Basic Spanish-I	MC	**2**	**-**	**-**	**-**	**-**	**50**	**-**	**2**	**50**
		Total		**23**	**2**	**08**	**40**	**60**	**270**	**330**	**28**	**700**
T4005	070125314	*Integrated Disaster Management	GP	-	-	-	-	-	-	-	-	Letter Grade

Semester IV

Catalog Course Cod	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7960	070125401	Statistics, Probability, and Numerical Methods	BS	3	-	-	-	-	30	45	3	75
T7961	070125402	Statistics, Probability, and Numerical Methods Lab	BS			2	10	15			1	25
T7629	070125403	Machine Drawing and Computer Graphics Lab	ES	-	-	4	20	30	-	-	2	50
T7632	070125404	Manufacturing Technology	PC	3	-	-	-	-	30	45	3	75
T7633	070125405	Manufacturing Technology Lab	PC	1	-	-	10	15	-	-	1	25
T1001	070125406	Machine Design–I	PC	3	2	-	-	-	40	60	4	100
T7699	070125407	Fluid Machinery	PC	4	-	-	-	-	40	60	4	100
T7613	070125408	Fluid Machinery Lab	PC	-	-	2	10	15	-	-	1	25
TE7059	070125409	Theory of Machines–II	PC	4	-	-	-	-	40	60	4	100
T7654	070125410	Theory of Machines–II Lab	PC	-	-	2	10	15	-	-	1	25
T8000	070125411	Service Learning	HS	4	-	-	-	-	100	-	4	100
Inter Institute Course II:												
T2353	070125412	Entrepreneurship	**OE**	**2**	**-**	**-**	**-**	**-**	**50**	**-**	**2**	**50**
		Total		**24**	**2**	**10**	**60**	**90**	**330**	**270**	**30**	**750**

Semester V

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
T7620	070125501	I. C. Engines	PC	3	-	-	-	-	30	45	3	75
T7621	070125502	I.C. Engines Lab	PC	-	-	2	10	15	-	-	1	25
T7627	070125503	Machine Design–II	PC	3	2	-	-	-	40	60	4	100
T7606	070125504	CAD & CAM	PC	4	-	-	-	-	40	60	4	100
T7607	070125505	CAD & CAM Lab	PC	-	-	2	10	15	-	-	1	25
T7618	070125506	Heat Transfer	PC	4	-	-	-	-	40	60	4	100
T7619	070125507	Heat Transfer Lab	PC	-	-	2	10	15	-	-	1	25
T7640	070125508	Mechatronics	OE	3	-	-	-	-	30	45	3	75
T7641	070125509	Mechatronics Lab	OE	-	-	2	10	15	-	-	1	25
T7647	070125510	Production Management	PC	3	-	-	-	-	30	45	3	75
T6274	070125511	Foundation of Ethics	MC	2	-	-	-	-	50	-	2	50
		Total		**22**	**2**	**8**	**40**	**60**	**260**	**315**	**27**	**675**

Semester VI

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical		CA	ESE		
							CA	ESE				
TE7081	070125601	Refrigeration and Air Conditioning	PC	3					30	45	3	75
T7649	070125602	Refrigeration and Air Conditioning Lab	PC	-	-	2	10	15	-	-	1	25
T7610	070125603	Finite Element Methods	PC	3	2	-	-	-	40	60	4	100
T7611	070125604	Finite Element Methods Lab	PC	-	-	2	10	15	-	-	1	25
TE7060	070125605	Engineering Design Optimization	PC	4					40	60	4	100
TE7038	070125606	Project planning and charter	PIS	-	-	4	20	30	-	-	2	50
Elective I(Choose any one from the following)												
TE7061	070125607	Mechanical Vibrations	PE	4	-	-	-	-	40	60	4	100
T7608	070125608	Computational Fluid Dynamics	PE	4	-	-	-	-	40	60	4	100
TE7062	070125609	Jigs and Fixtures	PE	4	-	-	-	-	40	60	4	100
Elective I– Lab(Choose any one from the following)												
TE7064	070125610	Mechanical Vibrations Lab	PE	-	-	2	10	15	-	-	1	25
T7686	070125611	Computational Fluid Dynamics Lab	PE	-	-	2	10	15	-	-	1	25
TE7063	070125612	Jigs and Fixtures Lab	PE	-	-	2	10	15	-	-	1	25
Elective II (Choose any one from the following)												
TE7065	070125613	Advanced Strength of Materials	PE	4					40	60	4	100
TE7066	070125614	Automobile Engineering	PE	4					40	60	4	100
TE7067	070125615	Flexible Manufacturing Systems	PE	4					40	60	4	100
Open Elective I(Choose any one from the following)												
T7499	070125616	JAVA	OE	3	-	-	-	-	30	45	3	75
T7020	070125617	Nanotechnology	OE	3	-	-	-	-	30	45	3	75
T7574	070125618	MATLAB	OE	3	-	-	-	-	30	45	3	75

				21	2	10	50	75	220	330	27	675
	070125619	Soft skills	MC	-	-	-	-	-	-	-	-	Letter Grade
	070125620	Energy Studies	MC	-	-	-	-	-	-	-	-	Letter Grade

Semester VII :

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Total Credits	Total Marks
				L	T	Lab	Practical CA	Practical ESE	CA	ESE		
Plan A												
T7191	070125701	Internship (6 Months)	PIS	-	-	-	195	130	-	-	13	325
T7671	070125702	Seminar	PIS	-	-	-	60	40	-	-	4	100
OR												
	070125703	Global Immersion Programme	PC	-	-	-	-	-	-	-	17	425
		Total		**-**	**-**	**-**	**255**	**170**	**-**	**-**	**17**	**425**
OR												
Plan B												
T7905	070125704	Internship (6-8Weeks)	PIS	-	-	10	75	50	-	-	5	125
T7048	070125705	Project Management	PE	4	-	-	-	-	40	60	4	100
TE7069	070125706	Advanced Manufacturing Technology	PE	4	-	-	-	-	40	60	4	100
T7646	070125707	Pressure Vessel Design	PE	4	-	-	-	-	40	60	4	100
		Total		**12**	**-**	**10**	**75**	**50**	**120**	**180**	**17**	**425**

Semester: VIII

Catalog Course Code	Course Code	Course Title	Nature	Teaching Scheme			Examination Scheme Marks				Credits	Total Marks
				L	T	Lab	Practical CA	Practical ESE	CA	ESE		
T2207	070125801	Operations Research	PC	3	2	-	-	-	40	60	4	100
T7804	070125802	Project	PIS	-	-	8	40	60	-	-	4	100
Elective III (Choose any one from the following)												
TE7070	070125803	Nature Inspired Optimisation Techniques	PE	3	2	-	-	-	40	60	4	100
T7624	070125804	Industrial Fluid Power	PE	3	2	-	-	-	40	60	4	100
T7622	070125805	Industrial Automation and Robotics	PE	3	2	-	-	-	40	60	4	100
Elective IV (Choose any one from the following)												
T7657	070125806	Tribology	PE	4	-	-	-	-	40	60	4	100
T7645	070125807	Power Plant Engineering	PE	4	-	-	-	-	40	60	4	100
TE7072	070125808	Total Quality Management	PE	4	-	-	-	-	40	60	4	100
Open Elective-II (Choose any one from the following)												
T7456	070125809	Town and Country Planning	OE	3	-	-	-	-	30	45	3	75

T7394	070125810	Smart Materials	OE	3	-	-	-	-	30	45	3	75
T7474	070125811	Basics of Database	OE	3	-	-	-	-	30	45	3	75
T7650	070125812	Six Sigma	OE	3	-	-	-	-	30	45	3	75
T7584	070125813	Printed Circuit Board (PCB) Design	OE	3	-	-	-	-	30	45	3	75
T7509	070125814	Open Source Technologies	OE	3	-	-	-	-	30	45	3	75
T7674	070125815	Cyber Security	MC	2	-	-	-	-	50	-	2	50
		Total		**15**	**4**	**8**	**40**	**60**	**200**	**225**	**21**	**525**

HS- Humanities and Social Sciences
L- Lecture , T-Tutorial
ES - Engineering Sciences
PIS- Project, Internship, Seminar
OE- Open Electives

CA- Continuous Assessment
ESE- End Semester Examination
Practical, CA, ESE are separate heads of Passing
PE- Professional Elective
BS – Basic Sciences
PD - Professional Development Course
MC - Mandatory Course
PC – Professional Core

Practical external examination may be conducted by alternate internal faculty

Summary

Semester	Internal Credits	External Credits	Total Credits	Total Marks
I	0	24	24	600
II	4	22	26	650
III	2	26	28	700
IV	6	24	30	750
V	2	25	27	675
VI	0	27	27	675
VII	0	17	17	425
VIII	0	21	21	525
Total	**14**	**186**	**200**	**5000**

* Integrated Disaster Management is mandatory for the award of degree.