T.Y.B.Tech. in Mechanical Engineering Course Credit System Academic Year 2022-23

NOTES:

- 1. Refer (i) Academic rules and regulations and (ii) Examination rules and regulations for further details
- 2. Laboratory course is considered as a separate head of passing.
- 3. Assessment criteria for laboratory/Tutorial work. i.e. weightage for assessment shall be as follows: i) Attendance in Laboratory/Tutorial = 20%, (ii) Journal= 40%, (iii) Practical Examination (and/or) Mini project (and/or) Quiz (and/or) Seminar (and/or) Oral (and/or) Industry visit report=40%.
- 4. Student can opt for an online course available on https://swayam.gov.in/ or https://onlinecourses.nptel.ac.in/ subject to approval from the department. After successful completion of the course, the course title can appear on the grade card of student.
- 5. The Mandatory courses are with Pass (P) and No Pass (NP) grades.
- 6. Department will offer the Value Added courses in a semester subject to availability of resources and enrolment of minimum 20 students opting for the course. Upon completion of the Value Added course, the course title shall appear in the grade card of the student.
- 7. Students can optionally opt for Non-Technical Value Added courses offered by Center for Continuing Education (CCE-SPCE). Upon successful completion of the course, the course title shall appear on student's grade card.
- 8. The contents of core courses are aligned with the latest GATE syllabus. The mapping between GATE syllabus topics and core courses is given in Table GATE-MAP.
- 9. For Open Elective courses, students with C.P.I. higher than 8.5 can opt for obtaining the credits by completing a online course (approved by department) offered through SWAYAM or NPTEL portal instead of completing elective courses offered by department/institute. Upon successful completion of course, the score given on certificate issued by SWAYAM/NPTEL will be converted to letter grade as per applicable examination regulation.

	Sardar Patel College of Engineering												
	Academic Year 2022-23 Courses Offered for Third Vear B Tech, in Mechanical Engineering (Semester V)												
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)			Credits	In ser Evalu (Poin	nester lation lts)	End End	Semester tion (Points)	End semester weightage (%)	Term work/P ractical	Total Points
			L	Р	Т		T-I	T-II	Points	Time (Hrs)		(Note 2)	
Core Courses													
1	Heat and Mass Transfer	PC-BTM501	3	0	0	3	20	20	100	3	60%	0	100
2	Mechatronics	PC-BTM503	3	0	0	3	20	20	100	3	60%	0	100
3	Dynamics of Machinery	PC-BTM512	2	0	0	2	20	20	100	3	60%	0	100
4	Thermal Systems	PC-BTM514	3	0	0	3	20	20	100	3	60%	0	100
5	Computer Aided Machine Drawing	PC-BTM515	1	0	0	1	20	20	100	3	60%	0	100
Laboratory Courses													
6	Heat and Mass Transfer Lab.	PC-BTM551	0	2	0	1	0	0	0	0	0	50	50
7	Mechatronics Lab.	PC-BTM553	0	2	0	1	0	0	0	0	0	50	50
8	Dynamic of Machinery Lab.	PC-BTM562	0	2	0	1	0	0	0	0	0	50	50
9	Thermal Systems Laboratory	PC-BTM564	0	2	0	1	0	0	0	0	0	50	50
10	Computer Aided Machine Drawing Lab. PC-BTM565		0	2	0	1	0	0	0	0	0	50	50
		Professio	onal Ele	ctive C	ourse - I								
11	Professional Elective Course - I	PE-BTM5xx	Refer Table PEC-TYBTECH 4 Refer Table PEC-TYBTECH							H			
		Ma	andator	y Cours	ses								
12	Health Safety and Environment (HSE)*	MC-BTM003	2	0	1	0	20	20	100	3	60%	25	125
Online Courses													
13	Online Course	OL-BTM58x	0	0	0	0	0	0	0	0	0	0	0
Value Added Courses													
14	Reverse Engineering and Product Development	VA-BTM591	2	-	-	0	20	20	100	3	60%	0	100
		Value A	dded No	on-Tecl	nnical Co	ourses							
15	Refer College Website	VN-BTxxx	Courses offered by CCE										
	TOTAL					21							

(*): The course MC-BTM003 may be offered by department for its completion in online mode. or SWAYAM/NPTEL portal by registering for an equivalent course approved by the department. In such case, student must obtain online course completion certificate for passing the course.

	Sardar Patel College of Engineering														
	Academic Year 2022-23 Courses Offered for Third Vear B Tech, in Mechanical Engineering (Semester VI)														
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)			Credits	In semester Evaluation (Points)		In semester Evaluation (Points)		emester End Semest luation Evaluation ints) (Points)		nester ation nts) End semester weightage (%)		Total Points
			L	Р	Т		T-I	T-II	Points	Time (Hrs)		(Note 2)			
Core Courses															
1	Manufacturing Planning and Control	PC-BTM605	3	0	1	4	20	20	100	3	60%	25	125		
2	2 CAD/CAM/CIM PC-BTM606 2				0	2	20	20	100	3	60%	0	100		
3	Refrigeration and Air-conditioning PC-BTM611				0	2	20	20	100	3	60%	0	100		
4	Machine Design	PC-BTM612	3	0	1	4	20	20	100	3	60%	25	125		
5	Internal Combustion Engine	PC-BTM614	2	0	0	2	20	20	100	3	60%	0	100		
Laboratory Courses															
6	CAD/CAM/CIM Laboratory	PC-BTM656	0	2	0	1	0	0	0	0	0	50	50		
7	Refrigeration and Air-conditioning Laboratory	PC-BTM661	0	2	0	1	0	0	0	0	0	50	50		
8	Internal Combustion Engine Laboratory	PC-BTM664	0	2	0	1	0	0	0	0	0	50	50		
	Professional Elective Course - II														
9	Professional Elective Course - II	PE-BTM5xx	Refer 7	Table PEC-	TYBTECH	4	Refer Table PEC-TYBTECH								
		Open El	lective	Course	- I										
10	Open Elective Course - I	OE-BTx6xx	Refer 7	able OEC-	TYBTECH	3			Refer	Table OE	C-TYBTEC	Η			
		On	line Co	urses											
11	Online Course	OL-BTM68x	0	0	0	0	0	0	0	0	0	0	0		
Value Added Courses															
12	CNC Programming	VA-BTM691	2	0	1	0	20	20	100	3	60%	25	125		
		Value Addec	l Non-7	Fechnic	al Course	S									
13	Refer College Website	VNT-BTxxx				Cou	rses of	fered b	by CCE						
	TOTAL					24									

	Sardar Patel College of Engineering Academic Year 2022-23													
Sr. No.	TABLE PEC-TYBTECH: Professional Ele Course Name	ective Co Specia lization	ourses - I and II Code	for Third Year B.Tec Course Plan per Week (Hrs)			ech. in I Credits	redits Evaluation (Points)		Engineering (Seme r End Semester Evaluation (Points)		End End semester weightage (%)	VI) Term work/P ractical	Total Points
				L	Р	Т		T-I	T-II	Points	Time (Hrs)		(Note 2)	
	Professional Elective Courses I and II													
1	Finite Element Methods for Mech. Engineers	D	PE-BTM511	3	2	0	4	20	20	100	3	60%	50	150
2	Mechanical Vibrations		PE-BTM518	3	0	1	4	20	20	100	3	60%	25	125
3	Composite Material Technology		PE-BTM532	3	0	1	4	20	20	100	3	60%	25	125
4	4 Lean and Green Manufacturing M PE-BTM534 3		0	1	4	20	20	100	3	60%	50	150		
5	Tool Engineering	M	PE-BTM537	3	0	1	4	20	20	100	3	60%	25	125
6	Industrial Mgmt. and Entrepreneurship	М	PE-BTM538	3	0	1	4	20	20	100	3	60%	25	125
7	Additive Manufacturing	М	PE-BTM539	3	0	1	4	20	20	100	3	60%	25	125
8	Hydraulic Machinery	Т	PE-BTM552	3	2	0	4	20	20	100	3	60%	50	150
9	Compressible Fluid Flow	Т	PE-BTM554	3	0	1	4	20	20	100	3	60%	25	125

Note: Specializations are: D - Design, M - Manufacturing, T - Thermal Engineering

	Sardar Patel College of Engineering Academic Year 2022-23 TABLE OEC-TYBTECH: Open Elective Courses -I offered by Mechanical Engineering Department for Third Year B.Tech. in Mechanical Engineering (Semester VI)												
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)		rse Plan per /eek (Hrs)		ln ser Evalı (Poir	nester Jation Its)	End Evaluat	Semester tion (Points)	End semester weightage (%)	Term work/P ractical	Total Points
			L P T				T-I	T-II	Points	Time (Hrs)		(Note 2)	
	Open Elective Courses - I												
1	Computational Methods	OE-BTM611	2	0	1	3	20	20	100	3	60%	25	125
2	Entrepreneurship Development and Start-up	OE-BTM613	2	0	1	3	20	20	100	3	60%	25	125
3	Introduction to Optimization Methods	OE-BTM614	2	0	1	3	20	20	100	3	60%	25	125
4	Industry 4.0	OE-BTM616	3	0	0	3	20	20	100	3	60%	0	100
5	Online Course from SWAYAM/NPTEL	OE-BTS6Mx	0	0	0	3	0	0	100	0	100%	0	100
Add	Additional OEC available: Refer open elective courses offered by Civil and Electrical Engineering Department of SPCE												

Table GATE-MAP: Alignment of Course Content with GATE Syllabus

No.	Section	Core courses in SPCE Curriculum 2022-23	Topics From GATE Syllabus
1	D	Machine Design	Machine Design
2	D	Design of Machines and Mech. Systems	Machine Design
3	D	Kinematics of Machinery	Theory of Machines
4	D	Dynamics of Machinery	Theory of Machines, Vibrations
5	D	Solid Mechanics	Mechanics of Materials
6	D	Strength of Materials	Mechanics of Materials
7	D	Computer Aided Machine Drawing	Machine Design
8	М	CAD/CAM/CIM	Computer Integrated Manufacturing
9	М	Mechanical Engineering Measurements	Metrology and Inspection
10	М	Manufacturing Science	Casting, Forming and Joining Processes; Machining and machine tool operations
11	М	Manufacturing Planing and Control	Production Planning and Control, Inventory Control, Operations Research
12	М	Mechatronics	Computer Integrated Manufacturing
13	М	Ind. Engg. And Proj./Fin. Mgmt.	Production Planning and Control, Operations Research
14	М	Material Science	Engineering materials
15	Т	Thermal Systems	Applications of Fluid mechanics and Thermal sciences
16	Т	Fluid Mechanics	Fluid Mechanics
17	Т	Heat and Mass Transfer	Heat-Transfer
18	Т	Refrigeration and Air-conditioning	Applications of Fluid mechanics and Thermal sciences
19	Т	Thermodynamics	Thermodynamics
20	Т	Internal Combustion Engine	Applications of Fluid mechanics and Thermal sciences
21	MATH	Applied Mathematics, I, II, III, IV	Linear Algebra, Calculus, Differential Equations, Complex variables, Probability and Statistics, Numerical Methods

B.Tech. in Mechanical Engineering

Note: Sections are: D - Applied Mechanics and Design, M - Materials, Manufacturing and Industrial Engineering, T - Fluid Mechanics and Thermal Sciences, MATH - Engineering Mathematics