

B. Tech. Mechanical Engineering
Course Structure for Semester III [Second Year] w.e.f. 2018-2019

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTBSC301	BSC 7	Engineering Mathematics-III	3	1	--	20	20	60	100	4
BTMEC302	ESC 11	Materials Science and Metallurgy	3	1	--	20	20	60	100	4
BTMEC303	PCC 1	Fluid Mechanics	3	1	--	20	20	60	100	4
BTMEC304	PCC 2	Machine Drawing and CAD	2	--	--	20	20	60	100	2
BTMEC305	ESC 12	Thermodynamics	3	1	--	20	20	60	100	4
BTHM3401	HSMC 3	Basic Human Rights	2	--	--	50	--	--	50	Audit (AU/ NP)
BTMEL307	ESC 13	Materials Science and Metallurgy Lab	--	--	2	60	--	40	100	1
BTMEL308	PCC 3	Fluid Mechanics Lab	--	--	2	60	--	40	100	1
BTMEL309	PCC 4	Machine Drawing and CAD Lab	--	--	4	60	--	40	100	2
BTMEF310	Project 1	Field Training / Internship/ Industrial Training I	--	--	--	--	--	50	50	1
Total			16	4	8	330	100	470	900	23

B. Tech. Mechanical Engineering
Course Structure for Semester IV [Second Year] w.e.f. 2018-2019

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTMEC401	PCC 5 ✓	Manufacturing Processes - I	2	1	--	20	20	60	100	3
BTMEC402	PCC 6 ✓	Theory of Machines-I	3	1	--	20	20	60	100	4
BTMEC403	PCC 7 ✓	Strength of Materials	3	1	--	20	20	60	100	4
BTMEC404	BSC 8	Numerical Methods in Mechanical Engineering	2	1	--	20	20	60	100	3
BTID405	PCC 8 ✓	Product Design Engineering – I	1	--	2	60	--	40	100	2
BTBSE406A	OEC 1	Physics of Engineering Materials	3	--	--	20	20	60	100	3
BTBSE3405A		Advanced Engineering Chemistry								
BTHM3402		Interpersonal Communication Skill & Self Development								
BTMEL407	PCC 9	Manufacturing Processes Lab – I	--	--	2	60	--	40	100	1
BTMEL408	PCC 10	Theory of Machines Lab- I	--	--	2	60	--	40	100	1
BTMEL409	PCC 11	Strength of Materials Lab	--	--	2	60	--	40	100	1
BTMEL410	BSC 9	Numerical Methods Lab	--	--	2	60	--	40	100	1
Total			14	4	10	400	100	500	1000	23

Minimum 4 weeks training which can be completed partially in third and fourth semester or in at one time.

B. Tech. Mechanical Engineering
Course Structure for Semester V [Third Year] w.e.f. 2019-2020

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTMEC501	PCC 12 ✓	Heat Transfer	3	1	--	20	20	60	100	4
BTMEC502	PCC 13 ✓	Applied Thermodynamics – I	2	1	--	20	20	60	100	3
BTMEC503	PCC 14 ✓	Machine Design – I	2	1	--	20	20	60	100	3
BTMEC504	PCC 15 ✓	Theory of Machines- II	3	1	--	20	20	60	100	4
BTMEC505	PCC 16 ✓	Metrology and Quality Control	2	1	--	20	20	60	100	3
BTID506	PCC 17 ✓	Product Design Engineering - II	1	--	2	60	--	40	100	2
BTMEC506A	✓	Automobile Engineering								Audit (AU/ NP)
BTMEC506B	OEC 2	Nanotechnology	3	--	--	--	--	--	--	
BTMEC506C	✓	Energy Conservation and Management								
BTMEL507	PCC 18	Heat Transfer Lab	--	--	2	30	--	20	50	1
BTMEL508	PCC 19	Applied Thermodynamics Lab	--	--	2	30	--	20	50	1
BTMEL509	PCC 20	Machine Design Practice- I	--	--	2	30	--	20	50	1
BTMEL510	PCC 21	Theory of Machines Lab- II	--	--	2	30	--	20	50	1
BTMEF511	Project 2 ✓	Field Training Internship/Industrial Training II	--	--	--	--	--	50	50	1
Total			16	5	10	280	100	470	850	24

B. Tech. Mechanical Engineering
Course Structure for Semester VI [Third Year] w.e.f. 2019-2020

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTMEC601	PCC 22	Manufacturing Processes- II	2	1	--	20	20	60	100	3
BTMEC602	PCC 23	Machine Design-II	3	1	--	20	20	60	100	4
BTMEC603	PCC 24	Applied Thermodynamics- II	2	1	--	20	20	60	100	3
BTMEC604A	PEC 1	Engineering Tribology	2	1	--	20	20	60	100	3
BTMEC604B		IC Engines								
BTMEC604C		Additive Manufacturing								
BTMEC604D		Mechanical Measurements								
BTMEC605A	OEC 3	Quantitative Techniques in Project Management	3	--	--	20	20	60	100	3
BTMEC605B		Sustainable Development								
BTMEC605C		Renewable Energy Sources								
BTMEC606A	OEC 4	Biology for Engineers	3	--	--	--	--	--	--	Audit (AU/ NP)
BTMEC606B		Solar Energy								
BTMEC606C		Human Resource Management								
BTMEL607	PCC 25	Metrology and Quality Control Lab	--	--	2	30	--	20	50	1
BTMEL608	PCC 26	Machine Design Practice-II	--	--	2	30	--	20	50	1
BTMEL609	PCC 27	IC Engine Lab	--	--	2	30	--	20	50	1
BTMEL610	PCC 28	Refrigeration and Air Conditioning Lab	--	--	2	30	--	20	50	1
BTMEM611	Project 3	Technical Project for Community Services	--	--	4	30	--	20	50	2
Total			15	4	12	250	100	400	750	22

B. Tech. Mechanical Engineering
Course Structure for Semester VII [Fourth Year] w.e.f. 2020-2021

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTMEC701	PCC 29	✓ Mechatronics	2	1	--	20	20	60	100	3
BTMEC702	PCC 30	✓ CAD/CAM	2	1	--	20	20	60	100	3
BTMEC703	PCC 31	✓ Manufacturing Processes - III	2	1	--	20	20	60	100	3
BTMEC704A	PEC 2	✓ Fluid Machinery	2	1	--	20	20	60	100	3
BTMEC704B		✓ Industrial Engineering and Management								
BTMEC704C		✓ Finite Element Method								
BTMEC704D		✓ Surface Engineering								
BTMEC704E		✓ Refrigeration and Air Conditioning								
BTAMC704C		✓ Automobile Design (Product Design, PLM, CAE, Catia)								
BTMEC705A	OEC 5	Engineering Economics	3	--	--	--	--	--	--	Audit (AU/ NP)
BTMEC705B		Intellectual Property Rights								
BTMEC705C		✓ Wind Energy								
BTMEC705D		Knowledge Management								
BTMEL706	PCC 32	Manufacturing Processes Lab - II	--	--	2	30	--	20	50	1
BTMEL707	PCC 33	Mechatronics Lab	--	--	2	30	--	20	50	1
BTMEL708	PCC 34	CAD/CAM Lab	--	--	2	30	--	20	50	1
BTMES709	Project 4	Seminar	--	--	2	30	--	20	50	1
BTMEF710	Project 5	Field Training / Internship/ Industrial Training III	--	--	--	--	--	50	50	1
BTMEP711	Project 6	Project Stage-I**	--	--	6	30	--	20	50	3
Total			11	4	14	230	80	390	700	20

**In case of students opting for Internship in the eighth semester, the Project must be industry-based.

B. Tech. Mechanical Engineering
Course Structure for Semester VIII [Fourth Year] w.e.f. 2020-2021

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
Choose any two subjects from ANNEXURE-A#			-	-	--	20	20	60	100	3
			-	-	--	20	20	60	100	3
BTMEP803	Project 7	Project Stage-II or Internship and Project*	--	--	30	50	--	100	150	15
Total			--	--	30	90	40	220	350	21

* Six months of Internship in the industry

These subjects are to be studied on self-study mode using SWAYAM/NPTEL/Any other source

Student doing project in Industry will give NPTEL Examination/Examination conducted by the University i.e. CA/MSE/ESE

Students doing project in the Institute will have to appear for CA/MSE/ESE

ANNEXURE-A#

Recommendations of 8th Semester Courses in Self-study Mode from NPTEL/ SWYAM Platform

Sr No	Course Code	Course Name	Duration (Weeks)	Institute Offering Course	Name of Professor
1	BTMEC801A	Fundamentals of Automotive Systems	12 Weeks	IITM	Prof. C. S. Shankar Ram
2	BTMEC801B	Mechanics of Fiber Reinforced Polymer Composite Structures	12 Weeks	IITG	Prof. Debabrata Chakraborty
3	BTMEC801C	Explosions and Safety	12 Weeks	IITM	Prof. K. Ramamurthi
4	BTMEC801D	Material Characterization	12 Weeks	IITM	Prof. Sankaran.S
5	BTMEC801E	Dealing with materials data : collection, analysis and interpretation	12 Weeks	IISc	Prof. M P Gururajan

**MASTER OF TECHNOLOGY
(Mechanical Engineering)**

Syllabus with effect from July 2018

Semester-I

Course Code	Type of Course	Name of the Course	Hours/Week			Credit	Examination Scheme				
			L	T	P		Theory		CA	PR/OR	Total
							TH	Test			
MMECH11	PCC	✓ Engineering Thermodynamics	3	1	--	4	60	20	20	--	100
MMECH12	PCC	✓ Machining and Forming Processes	3	1	--	4	60	20	20	--	100
MMECH13	PCC	✓ Mechanical Vibrations	3	1	--	4	60	20	20	--	100
MDE14A	Elective I	✓ Advanced Machine Design	3	--	--	3	60	20	20	--	100
MTE14B		✓ Utilization of Solar Energy									
MTE14C		✓ Advanced I.C. Engines									
MME14D		✓ Additive Manufacturing									
MMECH15A	Elective II	✓ Manufacturing Planning and Control	3	--	--	3	60	20	20	--	100

ME-XX15C		Hydraulic, Pneumatic and Fluidic Control										
MTE15D		Wind Energy										
MME15E		Finite Element Method										
BSH16	HSMC	Communication Skills	2	--	--	2	--	--	25	25	50	
MMECH17	PCC	Mechanical Engineering Lab	--	--	3	2	--	--	25	25	50	
Total			17	3	3	22	300	100	150	50	600	

Semester-II

Course Code	Type of Course	Name of the Course	Hours/Week			Credit	Examination Scheme				
			L	T	P		Theory		CA	PR/OR	Total
							TH	Test			
MMECH21	PCC	Advanced Fluid Mechanics and Heat Transfer	3	1	--	4	60	20	20	--	100
MMECH22	PCC	Mechanical Design Analysis	3	1	--	4	60	20	20	--	100
MMECH23A	Elective III	Numerical Methods and Computational Techniques	3	--	--	3	60	20	20	--	100
ME-XX23B		CAD- CAE									
MTE23B		Computational Fluid Dynamics									
MTE23C		Advanced Refrigeration									
MTE23D		Design of Heat Exchangers									
MTE23E	Alternative Fuels for I.C. Engines										
MTE24A	Elective IV	Steam and Gas Turbines	3	--	--	3	60	20	20	--	100
MME24B		Surface Engineering									
MTE24B		Cryogenic Engineering									

MMECH24C		Nanotechnology										
MME24F		World Class Manufacturing										
MOE25A	Elective V	Research Methodology	3	--	--	3	60	20	20	--	100	
MOE25B		Design of Experiments										
MOE25C		Advanced Optimization Techniques										
MOE25D		Environmental Engineering and Pollution Control										
MOE25E		Soft Computing Techniques										
MOE25F		Manufacturing Automation										
MOE25G		Modeling and Simulation										
MMECH26	PCC	Seminar	--	4	--	2	--	--	50	50	100	
MMECH27	PCC	Mini Project	--	--	4	2	--	--	50	50	100	
Total			15	6	4	21	300	100	200	100	700	

Semester-III

Course Code	Type of Course	Name of the Course	Hours/Week			Credit	Examination Scheme				
			L	T	P		Theory		CA	PR/OR	Total
							TH	Test			
MMECH31	PCC	Project Management (Self Study Course)	--	--	--	2	--	--	50	50	100
MMECH32		OR Intellectual Property Rights (Self Study Course)	--	--	--	2	--	--	50	50	100
MMECH33	PCC	Project Stage -I	---	--	--	10	--	--	50	50	100
Total			---	--	--	12	--	--	100	100	200

Semester-IV

Course Code	Type of Course	Name of the Course	Hours/Week			Credit	Examination Scheme				
			L	T	P		Theory		CA	PR/OR	Total
							TH	Test			
MMECH41 ✓	PCC	Project Stage -II	---	--	--	20	--	--	100	100	200
Total			---	--	--	20	--	--	100	100	200