

**RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR**

**Faculty of Science & Technology**

**Course Scheme of Bachelor of Engineering (Mechanical Engineering)**

		CREDITS								
Sr. No	Course Category	SEM I	SEM II	SEM III	SEM IV	SEM V	SEM VI	SEM VII	SEM VIII	TOTAL
1	Humanities, Social Sciences & Management courses	3			3	3				9
2	Basic Science courses	9	9	4						22
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	7	13							20
4	Professional core courses			16	17	14	15			62
5	Professional Elective courses relevant to chosen specialization/branch						6	7	7	20
6	Open Electives: Courses from other technical and /or emerging subjects					3		6	3	12
7	Project work, seminar and internship in industry or elsewhere, Industry Training and Skill Development					1	2	6	6	15
8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]									0
	TOTAL	19	22	20	20	21	23	19	16	160
	TOTAL MARKS	600	600	650	650	650	700	500	550	4900

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

## I Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme									
									Theory				Practical				
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	
1		Basic Science course	Mathematics - I	3	1	-	4	3	30	70	100	40	-	-	-	-	
2		Basic Science course	Applied Physics	3	1	-	4	3	30	70	100	40	-	-	-	-	
3		Engineering Science Courses	Engineering Graphics	1	-	-	1	2	15	35	50	20	-	-	-	-	
4		Engineering Science Courses	Energy & Environment	3	-	-	3	3	15	35	50	20	-	-	-	-	
5		Humanities, Social Sciences &	Communication & Aptitude Skills	2	-	-	2	-	15	35	50	20	-	-	-	-	
6		Engineering Science Courses	Basics of Civil & Mechanical	4	-	-	Audit (0)	-	50	-	50	-	-	-	-	-	
7		Basic Science course	Applied Physics Lab	-	-	2	1	-	-	-	-	-	25	25	50	25	
8		Engineering Science Courses	Engineering Graphics Lab	-	-	4	2	-	-	-	-	-	25	25	50	25	
9		Engineering Science Courses	Energy & Environment Lab	-	-	2	1	-	-	-	-	-	25	25	50	25	
10		Humanities, Social Sciences &	Communication Skills Lab	-	-	2	1	-	-	-	-	-	25	25	50	25	
11		Mandatory Course	Induction Program	Three Weeks			-	-	-	-	-	-	-	-	-	-	
Total				16	2	10	-	-	155	245	400	-	100	100	200	-	
Semester Total				28			19	Marks 600									

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

## II Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
				Theory					Practical							
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1		Basic Science course	Mathematics -II	3	1	-	4	3	30	70	100	40	-	-	-	-
2		Basic Science course	Applied Chemistry	3	1	-	4	3	30	70	100	40	-	-	-	-
3		Engineering Science Courses	Advance Engineering Materials	3	-	-	3	2	15	35	50	20	-	-	-	-
4		Engineering Science Courses	Engineering Mechanics	2	-	-	2	2	15	35	50	20	-	-	-	-
5		Engineering Science Courses	Basic Electrical Engineering	2	-		2	2	15	35	50	20	-	-	-	-
6		Engineering Science Courses	Computational Skills	2	-		2	2	15	35	50	20	-	-	-	-
7		Basic Science course	Applied Chemistry Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
8		Engineering Science Courses	Advance Engineering Materials Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
9		Engineering Science Courses	Workshop Practices	-	-	4	2	-	-	-	-	-	25	25	50	25
10		Engineering Science Courses	Computational Skills Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
11		Mandatory Course	Indian Culture and Constitution	2	-	-	Audit (0)	-	-	-	-	-	-	-	-	-
Total				17	2	10	-	-	120	280	400	-	100	100	200	-
Semester Total				29			22	Marks 600								

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

### III Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme										
									Theory					Practical				
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks		
1	BEME301T	Basic Science course	Applied Mathematics – III	3	1	-	4	3	30	70	100	40	-	-	-	-		
2	BEME302T	Professional core courses	Manufacturing Processes	3	-	-	3	3	30	70	100	40	-	-	-	-		
3	BEME302P	Professional core courses	Manufacturing Processes Lab	-	-	2	1	-	-	-	-	-	25	25	50	25		
4	BEME303T	Professional core courses	Engineering Thermodynamics	3	1	-	4	3	30	70	100	40	-	-	-	-		
5	BEME304T	Professional core courses	Kinematics of Machines	3	1	-	4	3	30	70	100	40	-	-	-	-		
6	BEME305P	Professional core courses	Machine Drawing & Solid Modelling	-	1	2	2	-	-	-	-	-	50	50	100	50		
7	BEME306P	Professional core courses	Computer Programming	-	1	2	2	-	-	-	-	-	50	50	100	50		
8	BEME307P	Mandatory Course	Sports / Yoga / NSS/NCC	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)										
Total				12	5	9	-	-	120	280	400	-	125	125	250	-		
Semester Total				26			20	Marks 650										

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

### IV Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
				Theory					Practical							
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME401T	Professional core courses	Machining Processes	3	-	-	3	3	30	70	100	40	-	-	-	-
2	BEME401P	Professional core courses	Machining Processes Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME402T	Professional core courses	Fluid Mechanics & Hydraulic Machines	3	1	-	4	3	30	70	100	40	-	-	-	-
4	BEME402P	Professional core courses	Fluid Mechanics & Hydraulic Machines Lab	-	-	2	1		-	-	-	-	25	25	50	25
5	BEME403T	Professional core courses	Material Science & Engineering	3	-	-	3	3	30	70	100	40	-	-	-	-
6	BEME404T	Professional core courses	Mechanics of Materials	3	1	-	4	3	30	70	100	40	-	-	-	-
7	BEME404P	Professional core courses	Materials Testing Lab	-	-	2	1		-	-	-	-	25	25	50	25
8	BEME405T	Humanities & Social Science	Professional Ethics	3	-	-	3	2	30	70	100	40	-	-	-	-
9	BEME406P	Mandatory Course	Sports /Yoga / NSS/NCC	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				15	2	9	-	-	150	350	500	-	75	75	150	-
Semester Total				26			20	Marks 650								

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

## V Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
				L	T	P		Theory					Practical			
								Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME501T	Professional core courses	Heat Transfer	3	1	-	4	3	20	80	100	40				
2	BEME501P	Professional core courses	Heat Transfer Lab	-	-	2	1		-	-	-	-	25	25	50	25
3	BEME502T	Professional core courses	Energy Conversion-I	3	1	-	4	3	20	80	100	40	-	-	-	-
4	BEME503T	Professional core courses	Design of Machine Elements	3	1	-	4	3	20	80	100	40	-	-	-	-
5	BEME503P	Professional core courses	Design of Machine Elements Lab	-	-	2	1		-	-	-	-	25	25	50	25
6	BEME504T	Humanities, Social Sciences & Management courses	Industrial Econmics and Management	3	-	-	3	3	20	80	100	40	-	-	-	-
7	BEME505T	Open Elective Course	Open Elective - I	3	-	-	3	3	20	80	100	40	-	-	-	-
8	BEME506P	Project work, seminar and internship in industry or elsewhere	Industrial Visit*	-	-	2	1	-	-	-	-	-	50	-	50	25
9	BEME507P	Mandatory Course	Performing Art	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				15	3	9	-	-	100	400	500	-	100	50	150	-
Semester Total				27			21	Marks 650								

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

## VI Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
				L	T	P		Theory					Practical			
								Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME601T	Professional core courses	Automation in Production	3	1	-	4	3	30	70	100	40	-	-	-	-
2	BEME601P	Professional core courses	Automation in Production Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME602T	Professional core courses	Energy Conversion-II	3	1	-	4	3	30	70	100	40	-	-	-	-
4	BEME602P	Professional core courses	Energy Conversion Lab	-	-	2	1		-	-	-	-	25	25	50	25
5	BEME603T	Professional core courses	Dynamics of Machines	3	1	-	4	3	30	70	100	40	-	-	-	-
6	BEME603P	Professional core courses	Dynamics of Machines Lab	-	-	2	1		-	-	-	-	25	25	50	25
7	BEME604T	Professional Elective courses	Elective - I	3	-	-	3	3	30	70	100	40	-	-	-	-
8	BEME605T	Professional Elective courses	Elective - II	3	-	-	3	3	30	70	100	40	-	-	-	-
9	BEME606P	Project work, seminar and internship in industry or elsewhere	Skill Development*	-	-	4	2	-	-	-	-	-	50	-	50	25
10	BEME607P	Project work, seminar and internship in industry or elsewhere	Summer Internship**	During Summer Vacation			Audit (0)	-	-	-	-	-	-	-	-	-
11	BEME608P	Mandatory Course	Environment Science	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				15	3	13	-	-	150	350	500		125	75	200	-
Semester Total				31			23	Marks 700								

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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

## VII Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme										
									Theory					Practical				
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks		
1	BEME701T	Professional Elective courses	Elective - III	3	-	-	3	3	30	70	100	40	-	-	-	-		
2	BEME702T	Professional Elective courses	Elective - IV	3	-	-	3	3	30	70	100	40	-	-	-	-		
3	BEME702P	Professional Elective courses	Elective - IV Lab	-	-	2	1		-	-	-	-	25	25	50	25		
4	BEME703T	Open Elective Course	Open Elective - II	3	-	-	3	3	30	70	100	40	-	-	-	-		
5	BEME704T	Open Elective Course	Open Elective - III	3	-	-	3	3	30	70	100	40	-	-	-	-		
6	BEME705P	Project work, seminar and internship in industry or elsewhere	Project - I	-	-	12	6	-	-	-	-	-	50	-	50	25		
7	BEME706P	Mandatory Course	Self Development	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)										
TOTAL				12	0	16	-	-	120	280	400	-	75	25	100	-		
Semester Total				28			19	Marks 500										



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## Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

### VIII Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
				Theory					Practical							
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME801T	Professional Elective courses	Elective - V	3	-	-	3	3	30	70	100	40	-	-	-	-
2	BEME801P	Professional Elective courses	Elective - V Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME802T	Professional Elective courses	Elective - VI	3	-	-	3	3	30	70	100	40	-	-	-	-
4	BEME803T	Open Elective Course	Open Elective -IV	3	-	-	3	3	30	70	100	40	-	-	-	-
5	BEME804P	Project work, seminar and internship in industry or elsewhere	Project - II	-	-	12	6	-	-	-	-	-	100	100	200	100
6	BEME805P	Mandatory Course	Self Development	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				9	0	16	-	-	90	210	300	-	125	125	250	-
Semester Total				25			16	Marks 550								

ELECTIVE I	ELECTIVE II	ELECTIVE III	ELECTIVE IV	ELECTIVE V	ELECTIVE VI	OPEN ELECTIVE I	OPEN ELECTIVE II	OPEN ELECTIVE III	OPEN ELECTIVE IV
VI SEM	VI SEM	VII SEM	VII SEM (T+P)	VIII SEM (T & P)	VIII SEM	V SEM	VII SEM	VIII SEM	VIII SEM
Mechanical Vibrations	Tribology	Design of Transmission System	Computer Aided Design	Finite Element Method	Design Optimization	Organizational Entrepreneurship Behaviour & Development	Industrial Safety & Environment	Design of Experiments	Industrial Robotics
Synthesis of Mechanism	Tool Design	Design of Material Handling System	Mechanical Measurement & Metrology	Computer Integrated Manufacturing	Stress Analysis	Automobile Engineering	Pollution and its Control	Fuel Cell Technology	Renewable Energy Resources
Operation Research	Advanced Manufacturing Techniques	Total Quality Management	Mechatronics	Refrigeration & Air conditioning	Industrial Engineering	Project Evaluation & Management	Finance & Cost Management	Intrumentation & Control	Waste Management
Production Planning & Control	CNC & Robotics	Composite Materials	Hydraulics & pneumatics	Additive Manufacturing	Green & Sustainable Manufacturing				
Convective Heat Transfer	Design of Heat Exchangers	Solar Energy & Utilization			Energy Conservation and Management				
Power Plant Engineering	Advanced I C Engines	Automobile Engineering			Computational Fluid Dynamics				