



**ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR**

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech. Scheme of Examination & Syllabus 2025-26**

**MECHANICAL ENGINEERING**

**Annexure – I**

**CREDIT FRAMEWORK STRUCTURE**

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course	BSC/ESC	7	7							14
Engineering Science Course		6	6							12
Program Core Course (PCC)	Program Courses	2	2	13	10	7	4	6		44
Program Elective Course (PEC)						4	6	6	4	20
Multidisciplinary Minor (MDM)	Multidisciplinary Courses			2	3	3	3	3		14
Open Elective (OE) Other than a particular program						2	3	3		08
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	2		1	1	2	2			08
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSM)	1	1			2				04
Entrepreneurship/Economics/Management Courses				2	2					04
Indian Knowledge System (IKS)				2						02
Value Education Course (VEC)				2	2					04
Research Methodology	Experiential Learning Courses								4	04
Comm. Engg. Project (CEP)/ Field Project (FP)					2					02
Project							2	2		04
Internship/OJT									12	12
Co-curricular Courses (CC)	Liberal Learning Courses	2	2							04
<b>Total Credits (Major)</b>		<b>20</b>	<b>160</b>							

		July 2025	3.0	Applicable for 2025-26
Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### GROUP II: SEMESTER I

Sr No.	Course Category	CourseCode	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	BSC	25ME101T	Applied Physics	2	-	-	2	10	10	30	50	23	1.5
2.	BSC	25ME101P	Applied Physics Lab	-	-	2	1	-	25	25	50	25	-
3.	BSC	25ME102T	Linear Algebra & Calculus	3	-	-	3	20	20	60	100	45	3
4.	BSC	25ME102P	Linear Algebra & Calculus Lab	-	-	2	1	-	25	25	50	25	-
5.	ESC	25ME103T	Engineering Graphics	2	-	-	2	10	10	30	50	23	1.5
6.	ESC	25ME103P	Engineering Graphics Lab	-	-	2	1	-	25	25	50	25	-
7.	ESC	25ME104T	Engineering Mechanics	2	-	-	2	10	10	30	50	23	1.5
8.	ESC	25ME104P	Engineering Mechanics Lab	-	-	2	1	-	25	25	50	25	-
10.	PCC	25ME105P	Logic Building with C lab	-	-	4	2	-	25	25	50	25	-
11.	AEC	25ME106P	Business Communication Skills I Lab	-	-	2	1	-	25	25	50	25	-
12.	SEC	25ME207T	Design Thinking #	2	-	-	2	10	10	30	50	23	1.5
13.	CC	25ME107T	Co-curricular Courses - I	2	-	-	2	-	50	-	50	23	-
<b>Total</b>				<b>13</b>	<b>0</b>	<b>14</b>	<b>20</b>	<b>60</b>	<b>260</b>	<b>330</b>	<b>650</b>		

# Course to be taken online through NPTEL

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Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### GROUP II : SEMESTER II

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	BSC	25ME201T	Applied Chemistry	2	-	-	2	10	10	30	50	23	1.5
2	BSC	25ME201P	Applied Chemistry Lab	-	-	2	1	-	25	25	50	25	-
3	BSC	25ME202T	Statistics and Transforms	3	-	-	3	20	20	60	100	45	3
4	BSC	25ME202P	Statistics and Transforms Lab	-	-	2	1	-	25	25	50	25	-
5	ESC	25ME203T	Basics of Electrical and Electronics Engineering	2	-	-	2	10	10	30	50	23	1.5
6	ESC	25ME203P	Basics of Electrical and Electronics Engineering Lab	-	-	2	1	-	25	25	50	25	-
7	ESC	25ME204T	Materials Engineering	2	-	-	2	10	10	30	50	23	1.5
8	ESC	25ME204P	Materials Engineering Lab	-	-	2	1	-	25	25	50	25	-
10	PCC	25ME205P	Problem Solving with Python Lab	-	-	4	2	-	25	25	50	25	-
11	AEC	25ME206P	Business Communication Skills – II Lab	-	-	2	1	-	25	25	50	25	-
12	IKS	25ME107T	Indian Knowledge Systems #	2	-	-	2	10	10	30	50	23	1.5
13	CC	25ME208T	Co-curricular Courses – II	2	-	-	2	-	50	-	50	23	-
<b>Total</b>				<b>13</b>	<b>0</b>	<b>14</b>	<b>20</b>	<b>60</b>	<b>260</b>	<b>330</b>	<b>650</b>		

# Course to be taken online through NPTEL

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Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### SEMESTER III

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25ME301T	Fluid Mechanics and Hydraulic Machines	3	-	-	3	20	20	60	100	45	3
2.	PCC	25ME301P	Fluid Mechanics and Hydraulic Machines Lab	-	-	2	1	-	25	25	50	25	-
3.	PCC	25ME302T	Engineering Thermodynamics	3	-	-	3	20	20	60	100	45	3
4.	PCC	25ME303T	Manufacturing Processes	3	-	-	3	20	20	60	100	45	3
5.	PCC	25ME303P	Manufacturing Processes Lab	-	-	2	1	-	25	25	50	25	-
6.	PCC	25ME304P	Machine Drawing Lab	-	-	4	2	-	25	25	50	25	-
7.	VEC	25ES401T	Environmental Science	2	-	-	2	10	10	30	50	23	1.5
8.	HSSM	25ES402T	Fundamentals of Economics and Management	2	-	-	2	10	10	30	50	23	1.5
9.	SEC	25ME341P	Career Development - I	-	-	2	1		50	-	50	25	-
10	MDM	25ME331M	MDM-I (Refer MDM basket)	2	-	-	2	10	10	30	50	23	1.5
<b>Total</b>				<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>90</b>	<b>215</b>	<b>345</b>	<b>650</b>		

Any one course from PCC/PEC will be executed in online mode through NPTEL. The NPTEL course will be notified one month prior to commencement of semester.

		July 2025	3.0	Applicable for 2025-26
Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### SEMESTER IV

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	PCC	25ME401T	Machining Process	3	-	-	3	20	20	60	100	45	3
2	PCC	25ME401P	Machining Process Lab	-	-	2	1	-	25	25	50	25	-
3	PCC	25ME402T	Strength of Materials	3	-	-	3	20	20	60	100	45	3
4	PCC	25ME402P	Strength of Materials Lab	-	-	2	1	-	25	25	50	25	-
5	PCC	25ME403P	Mechatronics Lab	-	-	2	1	-	25	25	50	25	-
6	PCC	25ME404P	Mechanical Measurements Lab	-	-	2	1	-	25	25	50	25	-
7	VEC	25ES301T	Constitution of India	2	-	-	2	10	10	30	50	23	1.5
8	HSSM	25ES302T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50	23	1.5
9	SEC	25ME441P	Career Development - II	-	-	2	1	-	50	-	50	25	-
10	CEP	25ME405P	Mini Project*	-	-	4	2	-	50	-	50	25	-
11	MDM	25ME431M	MDM-II (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
<b>Total</b>				<b>13</b>	<b>0</b>	<b>14</b>	<b>20</b>	<b>80</b>	<b>280</b>	<b>340</b>	<b>700</b>		

\* Field Project or Community engagement project in the major discipline

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		July 2025	3.0	Applicable for 2025-26
Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### SEMESTER V

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	PCC	25ME501T	Heat Transfer	3	-	-	3	20	20	60	100	45	3
2	PCC	25ME501P	Heat Transfer Lab	-	-	2	1	-	25	25	50	25	-
3	PCC	25ME502T	Design of Machine Elements	3	-	-	3	20	20	60	100	45	3
4	PEC	25ME503T	Professional Elective course - I	3	-	-	3	20	20	60	100	45	3
5	PEC	25ME503P	Professional Elective course - I Lab	-	-	2	1	-	25	25	50	25	-
6	VSC	25ME504P	Technical Skill Development - I	-	-	4	2	-	50	-	50	25	-
7	AEC	25ME541P	English for Engineers	-	-	4	2	-	50	-	50	25	-
8	MDM	25ME531M	MDM – III (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9	OE	25ME561O	Open Elective – I (Refer OE basket)	2	-	-	2	10	10	30	50	23	1.5
<b>Total</b>				<b>14</b>	<b>0</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>240</b>	<b>320</b>	<b>650</b>		

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### MECHANICAL ENGINEERING

#### SEMESTER VI

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25ME601T	Kinematics and Dynamic of Machines	3	-	-	3	20	20	60	100	45	3
2.	PCC	25ME601P	Kinematics and Dynamics of Machines Lab	-	-	2	1	-	25	25	50	25	-
3.	PEC	25ME602T	Professional Elective course - II	3	-	-	3	20	20	60	100	45	3
4.	PEC	25ME603T	Professional Elective course - III	3	-	-	3	20	20	60	100	45	3
5.	VSC	25ME604P	Technical Skill Development - II	-	-	4	2	-	50	-	50	25	-
6.	PROJ	25ME605P	Project - I	-	-	4	2	-	50	-	50	25	-
7.	MDM	25ME631M	MDM – IV (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
8.	OE	25ME661O	Open Elective – II (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
<b>Total</b>				<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>100</b>	<b>225</b>	<b>325</b>	<b>650</b>		

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Chairman - BoS	Dean – Academics	Date of Release	Version	



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### MECHANICAL ENGINEERING

#### SEMESTER VII

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1.	PCC	25ME701T	Automation & Robotics	2	-	-	2	10	10	30	50	23	1.5
2.	PCC	25ME702T	Energy Conversion	3	-	-	3	20	20	60	100	45	3
3.	PCC	25ME702P	Energy Conversion Lab	-	-	2	1	-	25	25	50	25	-
4.	PEC	25ME703T	Professional Elective course - IV	3	-	-	3	20	20	60	100	45	3
5.	PEC	25ME703P	Professional Elective course – IV Lab	-	-	2	1	-	25	25	50	25	-
6.	PEC	25ME704T	Professional Elective course - V	2	-	-	2	10	10	30	50	23	1.5
7.	PROJ	25ME705P	Project - II	-	-	4	2	-	50	50	100	50	-
8.	MDM	25ME731M	MDM – V (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9.	OE	25ME761O	Open Elective – III (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
Total				16	0	8	20	100	200	400	700		

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		July 2025	3.0	Applicable for 2025-26
Chairman - BoS	Dean – Academics	Date of Release	Version	



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### MECHANICAL ENGINEERING

#### SEMESTER VIII

##### Option A

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	RM	25ES801T	Research Methodology <sup>#</sup>	2	-	-	2	10	10	30	50	23	1.5
2	RM	25ES801P	Research Methodology Lab	-	-	4	2	-	25	25	50	25	-
3	PEC	25ME801T	Professional Elective Course - VI <sup>#</sup>	3	-	-	3	20	20	60	100	45	3
4	PEC	25ME801P	Professional Elective Course - VI Lab <sup>#</sup>	-	-	2	1	-	25	25	50	25	-
5	OJT	25ME803P(i)	Industry/Research Internship <sup>*</sup>	-	-	24	12	300		100	400	200	-
<b>Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>410</b>		<b>240</b>	<b>650</b>		

##### Option B

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Min Passing Marks	No of Hours for ESE
				L	T	P		Continual Assessment	Mid-Sem Examination	End Sem Examination	Total		
1	ELC	25ES801T	Research Methodology <sup>#</sup>	2	-	-	2	10	10	30	50	23	1.5
2	RM	25ES801P	Research Methodology Lab	-	-	4	2	25	-	25	50	25	-
3	PEC	25ME801T	Professional Elective Course - VI <sup>#</sup>	3	-	-	3	20	20	60	100	45	3
4	PEC	25ME801P	Professional Elective Course - VI Lab <sup>#</sup>	-	-	2	1	25	-	25	50	25	-
5	OJT	25ME804P(i)	Institutional Internship <sup>§</sup> & Project - III	-	-	24	12	300		100	400	200	-
<b>Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>410</b>		<b>240</b>	<b>650</b>		

**Option B is available to students only after recommendation of the concerned Head of the department. The project and internship should contribute towards career development plan of the students.**

**# Courses to be mapped with NPTEL/SWAYAM/MOOC offered course in that semester. Exam will be conducted by NPTEL/Institute**

**\* One semester internship in any industry is to be carried.**

**§ Two NPTEL courses of total six credits (as per choice of student) or Institutional Internship by IEDC, SVP CET.**

		July 2025	3.0	Applicable for 2025-26
Chairman - BoS	Dean - Academics	Date of Release	Version	



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### MECHANICAL ENGINEERING

#### Basket for Multi-Disciplinary Minor Courses (MDM)

##### A. Mechanical Engineering

Semester	Course Category	Course Code	Name of Course	Credits
III	MDM-I	25ME331M	Orientation course on Entrepreneurship	2
IV	MDM-II	25ME431M	Project Management	3
V	MDM-III	25ME531M	Industrial Safety	3
VI	MDM-IV	25ME631M	Vehicle Engineering	3
VII	MDM-V	25ME731M	Project Planning and auxiliary systems in vehicle development	3

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Chairman - BoS	Dean – Academics	Date of Release	Version	



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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### Basket for Program Elective Courses (PEC)

#### B. Mechanical Engineering

Semester	Course Category	Course Code	Name of Course	Credits
V	PEC	25ME503T(i)	Industrial Robotics	3+1
V	PEC	25ME503T(ii)	Computer Aided Design	3+1
V	PEC	25ME503T(iii)	Renewable Energy Systems	3+1
V	PEC	25ME503T(iv)	Advanced I/C Engine	3+1
VI	PEC	25ME602T(i)	Logistics and Supply Chain Management	3
VI	PEC	25ME602T(ii)	Mechanical Vibrations	3
VI	PEC	25ME602T(iii)	Heating Ventilation and Air Conditioning	3
VI	PEC	25ME602T(iv)	Operation Research and Industrial Engineering	3
VI	PEC	25ME603T(i)	Advances in Project and Quality Management	3
VI	PEC	25ME603T(ii)	Automotive Systems Engineering	3
VI	PEC	25ME603T(iii)	Noise Vibration and Harshness	3
VI	PEC	25ME603T(iv)	Production and Operation Management	3
VII	PEC	25ME703T(i)	Refrigeration and Air Conditioning	3+1
VII	PEC	25ME703T(ii)	Finite Element Method	3+1
VII	PEC	25ME703T(iii)	Computer Integrated Manufacturing	3+1
VII	PEC	25ME703T(iv)	Additive Manufacturing	3+1
VII	PEC	25ME704T(i)	Machine Fault Diagnosis	2
VII	PEC	25ME704T(ii)	Tool Design	2
VII	PEC	25ME704T(iii)	Fuel Cell Technology	2
VIII	PEC	25ME801T	Profession Elective-VI	3+1

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## B. Tech. Scheme of Examination & Syllabus 2025-26

### MECHANICAL ENGINEERING

#### Basket for Open Elective Courses (OE)

#### C. Mechanical Engineering

Semester	Course Category	Course Code	Name of Course	Credits
V	OE-I	25ME561O	Entrepreneurship Development	2
VI	OE-II	25ME661O	Automobile Engineering	3
VII	OE-II	25ME761O	Renewable Energy Resources	3

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### MECHANICAL ENGINEERING

#### EXIT OPTIONS

##### Award of UG Certificate in Major with 40 credits and an additional 8 credits (After First Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits
1.	Vocational Course on drafting software for 8 Weeks / Industry Internship for 8-week duration	Online/ Offline	8
2.			

##### Award of UG Diploma in Major with 80 credits and an additional 8 credits (After Second Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits
1.	Vocational Course on Modeling software for 8 weeks/ Industry Internship for 8-week duration	Online/ Offline	8
2.			

##### Award of UG Degree in Major with 120 credits and an additional 8 credits (After Third Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits
1.	Vocational Course on CAE software for 8 weeks/ Industry Internship for 8-week duration	Online/ Offline	8

		July 2025	3.0	Applicable for 2025-26
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