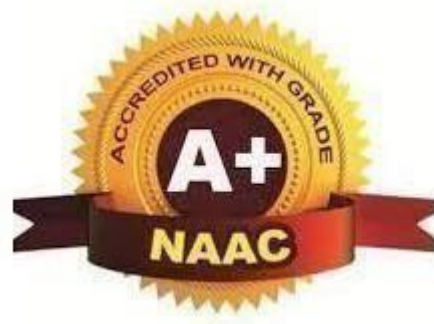




**TULSIRAMJI GAIKWAD-PATIL**  
**College of Engineering & Technology**

Mohgaon, Wardha Road, Nagpur - 441 108

**An Autonomous Institute**



Department  
of

**Mechanical Engineering**

**B.Tech. Mechanical Engineering**

**Teaching Scheme**

Considering

**National Education  
Policy 2020**

From

**Academic Year 2026-27**

## **Vision of Institute**

To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management.

## **Mission of Institute**

1. To strive for rearing standard and stature of the students by practicing high standards of professional ethics, transparency and accountability.
2. To provide facilities and services to meet the challenges of Industry and Society.
3. To facilitate socially responsive research, innovation and entrepreneurship.
4. To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices.

## **Vision of the Department**

“To emerge as a premier centre in the field of Mechanical Engineering Education and produce competent Engineers”.

## **Mission of the Department**

- To impart quality Technical Education through effective teaching-learning process.
- To provide a better environment to encourage innovation and entrepreneurship.
- To strengthen industry institute interaction to meet the challenges of industry and society.
- To ensure overall development of students and staff members by inculcating knowledge and professional ethics.

## **Program Education Objectives (PEO)**

- PEO 1: Demonstrate essential technical skills to identify, analyze and solve problems and design issues in Mechanical Engineering.
- PEO 2: Analyze the complex problems in the field of mechanical engineering by using modern tools.
- PEO 3: Apply mechanical engineering concepts for the betterment of society and environment.
- PEO 4: Develop professionals having administrative and managerial skills for mechanical engineering and allied industries.

## **Program Outcomes (PO)**

- PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
- PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
- PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/ components/ processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
- PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

**PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

**PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7). **PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

**PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

**PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

**PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

**PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for  
i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

### **Program Specific Outcomes (PSO)**

PSO 1:	Apply the knowledge to work professionally and ethically in Thermal, Design, production and Manufacturing areas of Mechanical engineering.
PSO 2:	Analyze and design mechanical components and its processes to meet the societal needs.
PSO 3:	Apply Engineering and Management principles to work professionally in the industry or as an entrepreneur.

**TULSIRAMJI GAIKWAD-PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

Wardha Road, Nagpur - 441108  
 Accredited with NAAC A+ Grade & NBA Accredited (EE, ME, CE & ECE)  
 Approved by AICTE, New Delhi, Govt. of Maharashtra  
 (An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

**Department of Basic Sciences and Humanities**

**Scheme of Instruction for First Year of B. Tech. (UG) Programme  
 Group-B Semester – I (AE/CE/ME)**

SN	Sem	Type	BoS/ Dept	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage				ESE Duration Hours
							L	P	SL	Hrs		CT/A	CA	ESE	TOTAL	
<b>FIRST SEMESTER (GROUP-B)</b>																
1	1	BSC	S&H	BSH41101	Linear Algebra and Calculus	T	4	0	2	6	4	30	10	60	100	3
2	1	BSC	S&H	BSH41106	Chemical Process in Engineering	T	3	0	2	5	3	30	10	60	100	3
3	1	BSC	S&H	BSH41107	Chemical Process in Engineering-Lab	P	0	2	-	2	1	25	-	25	50	-
4	1	ESC	CE	BCE41101	Engineering Mechanics	T	3	0	2	5	3	30	10	60	100	3
5	1	IKS	S&H	BSH41204	Indian Ancient Technology	T	2	0	2	4	2	15	5	30	50	1
6	1	ESC	ME	BME41101	IDEA-Lab & Engineering Workshop	P	0	4	-	4	2	50	-	-	50	-
7	1	ESC	CE	BCE41102	Environment Sustainability -Lab	P	0	2	-	2	1	25	-	25	50	-
8	1	VSEC	CSE	BCS41104	Fundamentals of Computer-Lab	P	0	2	-	2	1	25	-	25	50	-
9	1	VSEC	S&H	BSH41205	Social Internship	P	0	2	-	2	1	25	-	-	25	-
10	1	PCC	AE/ ME/ CE	BAE41101/ BME41102 BCE41103	Basics of Aircraft Design-Lab / CNC Machine and Programming-Lab / Building Maintenance -Lab	P	0	4	-	4	2	25	-	25	50	-
11	1	CC	S&H	BSH41X01	Liberal Learning Module-I	P	0	4	-	4	2	50	-	-	50	-
<b>TOTAL FIRST SEM</b>							<b>12</b>	<b>20</b>		<b>40</b>	<b>22</b>	<b>330</b>	<b>35</b>	<b>310</b>	<b>675</b>	<b>10</b>

<b>SECOND SEMESTER (GROUP-B)</b>																
1	2	BSC	S&H	BSH41201	Differential Equation and Statistics	T	4	0	2	6	4	30	10	60	100	3
2	2	BSC	S&H	BSH41206	Solid State Physics & Optics	T	3	0	2	5	3	30	10	60	100	3
3	2	BSC	S&H	BSH41210	Solid State Physics & Optics-Lab	P	0	2	-	2	1	25	-	25	50	-
4	2	ESC	EE	BEE41201	Principle of Electrical Engineering	T	3	0	2	5	3	30	10	60	100	3
5	2	ESC	EE	BEE41202	Principle of Electrical Engineering -Lab	P	0	2	-	2	1	25	-	25	50	-
6	2	ESC	ME	BME41202	Engineering & Computer Graphics	T	2	0	2	4	2	15	5	30	*50	1
7	2	ESC	IT	BIT41205	C+ Language -Lab	P	0	2	2	4	1	25	-	25	50	-
8	2	VSEC	CE	BCE41201	Computer Aided Drawing-Lab	P	0	2	-	2	1	25	-	25	50	-
9	2	VSEC	S&H	BSH41105	Professional Etiquette	P	0	2	-	2	1	25	-	-	25	-
10	2	AEC	S&H	BSH41104	Digital Wellness & Basic Communication Lab	P	0	4	-	4	2	50	-	-	50	-
11	2	CC	S&H	BSH41Y01	Liberal Learning Module-II	P	0	4	-	4	2	50	-	-	50	-
<b>TOTAL SECOND SEM</b>							<b>12</b>	<b>18</b>		<b>40</b>	<b>21</b>	<b>330</b>	<b>35</b>	<b>310</b>	<b>675</b>	<b>10</b>

Course Category	BSC/ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	Multidisciplinary courses	VSEC (Skill Course)	Social Science & Management		Experiential Learning Courses	CC (Co- Curricular Courses)
					AEC(Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits SEM-I	08 / 06	-	-	02	02	-	-	02
Credits SEM-II	08 / 07	02	-	02	-	02	-	02
Cumulative Sum	16 / 13	02	-	04	02	02	-	04

**PROGRESSIVE TOTAL CREDITS: 22 +21=43**

				<b>July, 2025</b>	<b>4.00</b>	<b>Applicable for AY 2025-26 Onwards</b>
<b>Chairperson</b>	<b>Dean Academics</b>	<b>Vice Principal</b>	<b>Principal</b>	<b>Date of Release</b>	<b>Version</b>	



**Scheme of Instruction for First Year of B. Tech. (UG) Programme  
Group-B (AE/CE/ME)**

**Liberal Learning Modules for SEM-I**

SN	Sem	Type	Bo S/ Dep t.	Sub. Code	Subject	T/P	Contact Hours			Credits	Weightage		
							L	P	Hrs		INT (1-Certificate)		External Practical
1	1	CC	S&H	BSH42Y01	Art & Craft	P	2	2	4	2	25	-	25
2	1	CC	S&H	BSH42Y02	Poster & Video Design	P	2	2	4	2	25	-	25
3	1	CC	S&H	BSH42Y03	IPD (Integrated of Personality Development)	P	2	2	4	2	25	25	-
4	1	CC	S&H	BSH42Y04	Sports (Outdoor & Indoor)	P	2	2	4	2	25	-	25
5	1	CC	S&H	BSH41X05	Yoga Practices & NSS	P	2	2		2	25	-	25
6	1	CC	S&H	BSH41X05	Interactive English (Level-1)	P	2	2	4	2	25	25	-
7	1	CC	S&H	BSH41X06	Gateway to Competitive Exams (Level-1)	P	2	2	4	2	25	25	-
8	1	CC	S&H	BSH41X08	Foreign Language -French (Level-1)	P	2	2	4	2	25		-
9	1	CC	S&H	BSH41X09	Foreign Language –German (Level-1)	P	2	2	4	2	25		-
10	1	CC	S&H	BSH41X10	Foreign Language –Japanese (Level-1)	P	2	2	4	2	25		-

**Liberal Learning Modules for SEM-II**

SN	Sem	Type	Bo S/ Dep t.	Sub. Code	Subject	T/P	Contact Hours			Credits	Weightage		
							L	P	Hrs		INT (1-Certificate)	ESE (MCQ)	External Practical
1	2	CC	S&H	BSH42Y01	Art & Craft	P	2	2	4	2	25	-	25
2	2	CC	S&H	BSH42Y02	Poster & Video Design	P	2	2	4	2	25	-	25
3	2	CC	S&H	BSH42Y03	IPD (Integrated of Personality Development)	P	2	2	4	2	25	25	-
4	2	CC	S&H	BSH42Y04	Sports (Outdoor & Indoor)	P	2	2	4	2	25	-	25
5	2	CC	S&H	BSH42Y05	Indian Cuisine	P	2	2	4	2	25	-	25
6	2	CC	S&H	BSH42Y05	Interactive English (Level-2)	P	2	2	4	2	25	25	-
7	2	CC	S&H	BSH42Y06	Gateway to Competitive Exams (Level-2)	P	2	2	4	2	25	25	-
8	2	CC	S&H	BSH42Y08	Foreign Language -French (Level-2)	P	2	2	4	2	25	25	-
9	2	CC	S&H	BSH42Y09	Foreign Language –German (Level-2)	P	2	2	4	2	25	25	-
10	2	CC	S&H	BSH42Y10	Foreign Language –Japanese (Level-2)	P	2	2	4	2	25	25	-

				July, 2025	4.00	Applicable for AY 2025-26 Onwards
Chairperson	Dean	Vice Principal	Principal	Date of	Version	



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

## SCHEME OF INSTRUCTIONS & SYLLABI

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Second Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)



### Semester--III

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	III	PCC	ME	BME42301	Manufacturing Technology and Processes	T	3	-	3	3	30	10	60	3 Hrs	100
2	III	PCC	ME	BME42302	Material Engineering	T	3	-	3	3	30	10	60	3 Hrs	100
3	III	PCC	ME	BME42303	Manufacturing Technology and Processes lab	P	-	2	2	1	-	25	25	2 Hrs	50
4	III	PCC	ME	BME42304	Material Engineering lab	P	-	2	2	1	-	25	25	2 Hrs	50
5	III	OEC	ME	BME42306	Open Elective-I	T	4	-	4	4	30	10	60	3 Hrs	100
6	III	HSSM	BA	BBA42304	Managerial Economics	T	2	-	2	2	14	6	30	2 Hrs	50
7	III	VEC	SH	BSH42308	Sustainable Development Goals	T	2	-	2	2	14	6	30	2 Hrs	50
8	III	MDM	ME	BSH42306	Engineering Mathematics-III	T	2	-	2	2	14	6	30	2 Hrs	50
9	III	CEP	ME	BME42305	Micro Project	P	-	4	4	2	-	50	-	2 Hrs	50
10	III	CC	BSH	BSH423XX	Liberal Learning Module-III	P	-	2	2	1	-	50	-	2 Hrs	50
<b>Total</b>							<b>16</b>	<b>10</b>	<b>26</b>	<b>21</b>	<b>132</b>	<b>198</b>	<b>320</b>	<b>23 Hrs</b>	<b>650</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Program Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	8	--	4	2	--	2	2		2	1
Cumulative Sum	16/13	10	--	4	2	4	2	6		2	5

**PROGRESSIVE TOTAL CREDITS: 43+21=64**

				June, 2026	1.00	Applicable for AY2026-27 Onwards
Chairperson HOD	Vice Principal / Director Academics	Director Administration	Principal	Date of Release	Version	

Mechanical Engineering (NBA Accredited)  
Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur

Director Academics  
Tulsiramji Gaikwad-Patil  
College Of Engineering  
And Technology, Nagpur

Dr. Premanand Naktode  
Principal  
TGPCET, Nagpur



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

## SCHEME OF INSTRUCTIONS & SYLLABI

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Second Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)





### Semester-IV



Sr. No.	Sem	Type	BOS/ Dept	Sub Code	Subject	T/P	Contact Hrs/Wk			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	IV	PCC	ME	BME42401	Mechanics of Materials	T	3	-	3	3	30	10	60	3Hrs	100
2	IV	PCC	ME	BME42402	Fluids Mechanics and Hydraulic Machines	T	3	-	3	3	30	10	60	3Hrs	100
3	IV	PCC	ME	BME42403	Engineering Thermodynamics	T	3	-	3	3	30	10	60	3Hrs	100
4	IV	PCC	ME	BME42404	Mechanics of Materials Lab	P	-	2	2	1	-	25	25	2Hrs	50
5	IV	PCC	ME	BME42405	Fluids Mechanics and Hydraulic Machines Lab	P	-	2	2	1	-	25	25	2Hrs	50
6	IV	OEC	ME	BME42407	Open Elective-II	T	2	-	2	2	14	6	30	2 Hrs	50
7	IV	VEC	BSH	BSH42403	Human Value for Professional Society	T	2	-	2	2	14	6	30	2 Hrs	50
8	IV	VSEC	ME	BME42406	Basics of CNC Programming (IDEA Lab)	P	-	4	4	2	-	50	50	4Hrs	100
9	IV	AEC	BSH	BSH42404	Leadership and Team Dynamics	P	-	4	4	2	-	50	50	4Hrs	100
10	IV	MDM	EC	BEC42306	Basic of Electronics and communication	T	2	-	2	2	14	6	30	2 Hrs	50
11	IV	CC	BSH	BSH424XX	Liberal Learning Module-IV	P	-	2	2	1	-	50	-	2Hrs	50
<b>Total</b>							<b>15</b>	<b>14</b>	<b>29</b>	<b>22</b>	<b>132</b>	<b>248</b>	<b>420</b>	<b>29 Hrs</b>	<b>800</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Program Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	11	--	2	2	2	2	2	2	--	1
Cumulative Sum	16/13	21	--	6	4	6	4	8	8	2	6

**PROGRESSIVE TOTAL CREDITS: 64+22=86**

 Chairperson HOD	 Vice Principal / Director Academics	 Director Administration	 Principal	June, 2026 Date of Release	1.00 Version	Applicable for AY2026-27 Onwards
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Mechanical Engineering (NBA Accredited)  
Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur

Dr. Premanand Naktode  
Principal  
TGPCET, Nagpur



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

## SCHEME OF INSTRUCTIONS & SYLLABI

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Third Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)

### Semester-V



Sr. No.	Sem	Type	BOS/ Dept	Course Code	Course Title	T/P	Contact			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	V	PCC	ME	BME43501	Heat Transfer	T	3	-	3	3	30	10	60	3Hrs	100
2	V	PCC	ME	BME43502	Kinematics and Dynamics of Machinery	T	3	-	3	3	30	10	60	3Hrs	100
3	V	PCC	ME	BME43503	Design of Machine Elements	T	3	-	3	3	30	10	60	3Hrs	100
4	V	PCC	ME	BME43508	Heat Transfer Lab	P	-	2	2	1	-	25	25	2Hrs	50
5	V	PCC	ME	BME43509	Kinematics and Dynamics of Machinery Lab	P	-	2	2	1	-	25	25	2Hrs	50
6	V	PCC	ME	BME43510	Design of Machine Elements Lab	P	-	2	2	1	-	25	25	2Hrs	50
7	V	PEC	ME	BME43504-07	Program Elective-I	T	4	-	4	4	30	10	60	3Hrs	100
8	V	MDM	MBA	BBA43501	Business Development Formulation	T	4	-	3	4	30	10	60	3Hrs	100
9	V	OEC	ME	BME435XX	Open Elective-III	T	2	-	2	2	14	6	30	2 Hrs	50
<b>Total</b>							<b>19</b>	<b>6</b>	<b>24</b>	<b>22</b>	<b>164</b>	<b>131</b>	<b>405</b>	<b>23 Hrs</b>	<b>700</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Program Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	12	4	2	4	--	--	--	--	--	--
Cumulative Sum	16/13	33	4	8	8	6	4	8	2	6	

**PROGRESSIVE TOTAL CREDITS :86+22 =108**

 Chairperson HOD	 Vice Principal / Director Academics	 Director Administration	 Principal	June, 2026 Date of Release	1.00 Version	Applicable for AY 2026-27 Onwards
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Mechanical Engineering (NBA Accredited) Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur  
 Director Academics Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur  
 Dr. Premanand Naktode  
Principal  
TGP CET, Nagpur



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

## SCHEME OF INSTRUCTIONS & SYLLABI

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Third Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)

### Semester-VI



Sr. No.	Sem	Type	BOS/Dept	Course Code	Course Title	T/P	Contact Hrs/Wk			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	VI	PCC	ME	BME43601	Internal Combustion Engine	T	3	-	3	3	30	10	60	3Hrs	100
2	VI	PCC	ME	BME43602	Mechatronics & Robotics	T	3	-	3	3	30	10	60	3Hrs	100
3	VI	PEC	ME	BME43605-08	Program Elective-II	T	4	-	4	4	30	10	60	3Hrs	100
4	VI	PEC	ME	BME43609-12	Program Elective-III	T	4	-	4	4	30	10	60	3Hrs	100
5	VI	PCC	ME	BME43613	Internal Combustion Engine Lab	P	-	2	2	1	-	25	25	2Hrs	50
6	VI	PCC	ME	BME43614	Mechatronics & Robotics Lab	P	-	2	2	1	-	25	25	2Hrs	50
7	VI	MDM	IT	BCS43601	Artificial Intelligence Lab	P	-	2	2	1	-	25	25	2Hrs	50
8	VI	VSEC	ME	BME43605	Additive Manufacturing & Reverse Engineering Lab (IDEA Lab)	P	-	2	2	1	-	25	25	2Hrs	50
9	VI	CEP	ME	BME43605	Mini Project	P	-	4	4	2	-	50	-	2 Hrs	50
<b>Total</b>							<b>14</b>	<b>12</b>	<b>26</b>	<b>20</b>	<b>120</b>	<b>190</b>	<b>340</b>	<b>22 Hrs</b>	<b>650</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Program Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	8	8	--	2	2	--	--	--	2	--
Cumulative Sum	16/13	41	12	8	10	8	4	8	4	4	6

**PROGRESSIVE TOTAL CREDITS: 108+20=128**

				June, 2026	1.00	Applicable for AY2026-27 Onwards
Chairperson HOD	Vice Principal / Director Academics	Director Administration	Principal	Date of Release	Version	

Mechanical Engineering (NBA Accredited)  
Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur

Dr. Premanand Naktode  
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TGPCET, Nagpur



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

**SCHEME OF INSTRUCTIONS & SYLLABI**

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Fourth Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)

**Semester-VII**



Sr. No.	Course Category	Course Code	Course Title	T/P	Contact Hrs/Wk			Credits	Exam Scheme			ESE Duration	Total Marks
					L	P	Hrs		CT/IA	CA	ESE		
1	PCC	BME44701	Refrigeration and Air Conditioning	T	4	-	4	4	30	10	60	3Hrs	100
2	PCC	BME44702	Design of Mechanical drives	T	4	-	4	4	30	10	60	3Hrs	100
3	PEC	BME44704-07	Program Elective-IV	T	4	-	4	4	30	10	60	3Hrs	100
4	MDM	BEE 44712	Introduction to Electric Vehicles	T	4	-	4	4	30	10	60	3Hrs	100
5	PCC	BME44708	Refrigeration and Air Conditioning Lab	P	-	2	2	1	-	25	25	2 Hrs	50
6	PCC	BME44709	Advance CAD Lab	P	-	2	2	1	-	25	25	2 Hrs	50
7	CEP	BME44710	Project (Mega Project)	P	-	8	8	4	-	100	100	2 Hrs	200
<b>Total</b>					<b>16</b>	<b>12</b>	<b>28</b>	<b>22</b>	<b>120</b>	<b>190</b>	<b>390</b>	<b>18 Hrs</b>	<b>700</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	10	4	--	4	--	--	--	--	4	--
Cumulative Sum	16/13	51	16	8	14	8	8	8	8	8	6

PROGRESSIVETOTALCREDITS:128+22=150

				June,2026	1.00	Applicable for AY2026-27 Onwards
Chairperson HOD	Vice Principal / Director Academics	Director Administration	Principal	Date of Release	Version	

Mechanical Engineering (NBA Accredited)  
Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

Director Academics  
Tulsiramji Gaikwad-Patil  
College Of Engineering  
And Technology, Nagpur

Dr. Premanand Naktode  
Principal  
TGPCET, Nagpur



# Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

SCHEME OF INSTRUCTIONS & SYLLABI

Programme: Mechanical Engineering (NBA Accredited)

Scheme of Instructions: Fourth Year B.Tech. in Mechanical Engineering (As Per New NEP 2020)

**Semester-VIII**



Sr. No.	Course Category	Course Code	Course Title	T/P	Contact Hrs/Wk			Credits	Exam Scheme			ESE Duration	Total Marks
					L	P	Hrs		CT/IA	CA	ESE		
1	PCC	BME44801	Research Methodology	T	4	-	4	4	30	10	60	3Hrs	100
2	CEP	BME44802	Internship/ On Job Training	P	-	24	24	12	-	100	200	2 Hrs	300
3			<b>Total</b>		<b>4</b>	<b>24</b>	<b>28</b>	<b>16</b>	<b>30</b>	<b>110</b>	<b>260</b>	<b>5 Hrs.</b>	<b>400</b>

Course Category	BSC/ESC (Basic Science Course/Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	OEC (Open Elective Course)	Multi-disciplinary courses	VSEC (Skill Course)	VEC (Value Education Courses)	Humanities Social Science & Management		Experiential Learning Courses	CC (Liberal Learning Courses)
								AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits	-	4	--	--	--	--	--	--	--	12	--
Cumulative Sum	16/13	56	16	8	14	8	8	8	8	20	6

**PROGRESSIVE TOTAL CREDITS: 150+16 =166**

				June, 2026	1.00	Applicable for AY2026-27 Onwards
Chairperson HOD	Vice Principal / Director Academics	Director Administration	Principal	Date of Release	Version	

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SCHEME OF INSTRUCTIONS & SYLLABI

Program: Mechanical Engineering (NBA Accredited)

List of Electives offered by

**Mechanical Engineering (As Per New NEP 2020)**



Program Elective- I	Program Elective-II	Program Elective- III	Program Elective- IV
<b>Semester V</b>	<b>Semester VI</b>	<b>Semester VI</b>	<b>Semester VII</b>
BME43504: Industrial Economics and Management	BME43605: Hydraulic and Pneumatic Systems	BME43609: Finite Element Method	BME44704: Material Handling System
BME43505: Computer Aided Design	BME43606: Mechanical Measurement and Metrology	BME43610: Advanced Manufacturing techniques	BME44705: Total Quality Management
BME43506: Automotive System	BME43607: Ginning Processes	BME43611: Operation Research	BME44706: Ginning Management
BME43507: Smart Manufacturing	BME43608: Control System Engineering	BME43612: Industrial Robotics	BME44707: Computer Integrated Manufacturing

## Program: Mechanical Engineering

List of **Open Electives** offered Mechanical Engineering Department (NBA Accredited)

Open Elective-I	Open Elective-II	Open Elective-III
<b>III-Semester</b>	<b>IV-Semester</b>	<b>V-Semester</b>
BME42306: Basics of Manufacturing Technology and Processes	BME42407: Automobile Engineering	BME43504: Additive Manufacturing

				June, 2026	1.00	Applicable for AY2026-27 Onwards
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