GOVERNMENT COLLEGE OF ENGINEERING KARAD

(*An Autonomous Institute of Government of Maharashtra*)

DEPARTMENT OF MECHANICAL ENGINEERING

SCHEME OF INSTRUCTION & SYLLABI AS PER NEP-2020

W.E.F

AY 2023-24

GOVERNMENT COLLEGE OF ENGINEERING KARAD

(*An Autonomous Institute of Government of Maharashtra*)

DEPARTMENT OF MECHANICAL ENGINEERING

INSTITUTE VISION
To emerge as a technical Institute of national repute driven by excellence in imparting value based education and innovation in research to face the Global needs of profession.

INSTITUTE MISSION
To create professionally competent engineers driven with the sense of responsibility towards nature and society.

DEPARTMENT VISION
"Be a nationally recognized mechanical engineering department that provides right academic ambience and nurtures innate talent of students"

DEPARTMENT MISSION
"Prepare engineering students for successful career by imparting knowledge, skills & right attitude."

GOVERNMENT COLLEGE OF ENGINEERING KARAD

(*An Autonomous Institute of Government of Maharashtra*)

DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1	Solve problems related with mechanical engineering using knowledge of mathematics, basic sciences, mechanical and relevant engineering disciplines and skills developed during graduation studies
PEO2	Demonstrate an understanding about selected specific areas of mechanical engineering as a critical step in career development
PEO3	Function and communicate effectively, both individually and with multidisciplinary teams using professional ethics, social awareness and environmental concern
PEO4	Engage in lifelong learning for successful adaptation to technological changes due to research

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1	Able to exhibit skills to cater industry requirements..
PSO2	Able to create a knowledge through project based learning
PSO3	Able to excel in multidisciplinary environment.

GOVERNMENT COLLEGE OF ENGINEERING KARAD

(*An Autonomous Institute of Government of Maharashtra*)

DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME OUTCOMES (PO)

PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: B.Tech. Mechanical Engineering

Proposed Scheme of Instructions: First Year B. Tech. in Mechanical Engineering

Semester – I (w.e.f. 2023-24)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	BSC	ME3101	Applied Mathematics - I	3	1	-	4	4	20	20	60	100
2	BSC	ME3102	Applied Physics	3	-	-	3	3	20	20	60	100
3	PCC	ME3103	Basic Mechanical Engineering	3	-	-	3	3	20	20	60	100
4	ESC	ME3104	Applied Mechanics	3	-	-	3	3	20	20	60	100
5	ESC	ME3105	Design Thinking	1	-	2	3	2	-	50	-	50
6	BSC	ME3106	Applied Physics Lab	-	-	2	2	1	-	25	-	25
7	PCC	ME3107	Basic Mechanical Engineering Lab	-	-	2	2	1	-	50	25	75
8	HSSM	ME3108	Professional Communication Skills	1	-	2	3	2	-	50	25	75
9	ESC	ME3109	Applied Mechanics Lab	-	-	2	2	1	-	25	-	25
10	CCA	ME3110	Yoga	-	-	2	2	1	-	50	-	50
11	VSEC	ME3111	Workshop practice I	-	-	2	2	1	-	50	50	100
			Total	**14**	**1**	**14**	**27**	**22**	**80**	**380**	**340**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE - In Semester Evaluation

ESE- End Semester Examination (For Laboratory, End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	**08**	**6**	**4**	**-**	**-**	**01**	**02**	**-**	**01**
Cumulative Sum	**08**	**6**	**4**	**-**	**-**	**01**	**02**	**-**	**01**

PROGRESSIVE TOTAL CREDITS: 22

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: B.Tech. Mechanical Engineering

Proposed Scheme of Instructions: First Year B. Tech. in Mechanical Engineering

Semester – II (w.e.f. 2023-24)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	BSC	ME3201	Applied Mathematics - II	3	1	-	4	4	20	20	60	100
2	BSC	ME3202	Applied Chemistry	3	-	-	3	3	20	20	60	100
3	ESC	ME3203	Engineering Graphics	3	-	-	3	3	20	20	60	100
4	ESC	ME3204	Basic Electrical & Electronics	3	-	-	3	3	20	20	60	100
5	HSSM	ME3205	Indian Knowledge Systems (MOOC)	-	-	-	-	2	-	-	100	100
6	ESC	ME3206	Programming For Problem Solving	2	-	-	2	2	20	20	60	100
7	BSC	ME3207	Applied Chemistry Lab	-	-	2	2	1	-	25	-	25
8	ESC	ME3208	Engineering Graphics Lab	-	-	2	2	1	-	50	-	50
9	ESC	ME3209	Programming for Problem Solving Lab	-	-	2	2	1	-	25	-	25
10	CCA	ME3210	NCC/NSS/CSP/E-Cell activity	-	-	2	2	1	-	50	-	50
11	VSEC	ME3211	Workshop II	-	-	2	2	1	-	25	25	50
			Total	**14**	**1**	**10**	**27**	**22**	**100**	**275**	**425**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	**08**	**10**	**-**	**-**	**-**	**01**	**02**	**-**	**01**
Cumulative Sum	**16**	**16**	**4**	**-**	**-**	**02**	**04**	**-**	**02**

PROGRESSIVE TOTAL CREDITS: 22+22 =44

Government College of Engineering, Karad

SCHEME OF INSTRUCTION

Programme: Mechanical Engineering

Scheme of Instructions: **UG Certificate Level**

(EXIT COURSE after FY of Engineering)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Course Credits	Mode of Learning
1	EL (INTR)	ME-EC-0101	Industrial Training / Internship *	-	-	-	-	4	Offline
2	PCC	ME-EC-0102	Machine Maintenance Lab	-	-	8	8	4	Offline
		OR							
		ME-EC-0103	Vehicle Maintenance Lab	-	-	8	8	4	Offline
		OR							
		ME-EC-0104	Modelling and Drafting Lab	-	-	8	8	4	Offline
			Total					**08**	

*Industrial Training of 4 weeks duration

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: B.Tech. Mechanical Engineering

Proposed Scheme of Instructions: Second Year B. Tech. in Mechanical Engineering

Semester – III (w.e.f. 2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	BSC	ME3301	Mathematics for Mechanical Engineering	3	-	-	3	3	20	20	60	100
2	PCC	ME3302	Engineering Thermodynamics	3	-	-	3	3	20	20	60	100
3	PCC	ME3303	Material Engineering	3	-	-	3	3	20	20	60	100
4	MDM	ME33*4	Multi-disciplinary Minor - 01	2	-	-	2	2	20	20	60	100
5	OE	ME3305	Open Elective -01	3	-	-	3	3	20	20	60	100
6	HSSM	ME3306	Universal Human Values	2	-	-	2	2	-	50	-	50
7	HSSM	ME3307	Economics for Engineers	2	-	-	2	2	-	50	-	50
8	PCC	ME3308	Engineering Thermodynamics Lab	-	-	2	2	1	-	25	25	50
9	PCC	ME3309	Material Engineering Lab	-	-	2	2	1	-	25	25	50
10	PCC	ME3310	Machine Drawing & Computer Aided Drafting Lab	-	-	2	2	1	-	50	-	50
11	OE	ME3311	Open Elective -01 Lab	-	-	2	2	1	-	25	25	50
			Total	**18**		**8**	**26**	**22**	**100**	**325**	**375**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	**03**	-	**9**	-	**6**	-	**04**	-	-
Cumulative Sum	**19**	**16**	**13**	-	**6**	**02**	**08**	-	**02**

PROGRESSIVE TOTAL CREDITS: 44+22 =66

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: B.Tech. Mechanical Engineering

Proposed Scheme of Instructions: Second Year B. Tech. in Mechanical Engineering

Semester – IV (w.e.f. 2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	PCC	ME3401	Fluid Mechanics & Machines	3	-	-	3	3	20	20	60	100
2	PCC	ME3402	Strength of Materials	3	-	-	3	3	20	20	60	100
3	PCC	ME3403	Numerical Methods	3	-	-	3	3	20	20	60	100
4	PCC	ME3404	Machine Tools and Processes	3	-	-	3	3	20	20	60	100
5	MDM	ME3405	Multi-disciplinary Minor - 02	2	-	-	2	2	20	20	60	100
6	OE	ME3406	Open Elective -02	2	-	-	2	2	20	20	60	100
7	HSSM	ME3407	Strategic Management	2	-	-	2	2	-	25	0	25
8	HSSM	ME3408	Professional Ethics	2	-	-	2	2	-	25	0	25
9	VSEC	ME3409	Workshop Practice – III	-	-	2	2	1	-	50	25	75
10	PCC	ME3410	Fluid Mechanics & Machines Lab	-	-	2	2	1	-	50	25	75
11	BSC	ME3411	Environmental Science	2	-	-	2	Audit	20	20	60	100
			Total	**22**	**0**	**4**	**26**	**22**	**120**	**270**	**410**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	**13**	-	**4**	**01**	**04**	-	-
Cumulative Sum	**19**	**16**	**26**	-	**10**	**03**	**12**	-	**02**

PROGRESSIVE TOTAL CREDITS: 66+22 =88

Government College of Engineering, Karad

SCHEME OF INSTRUCTION

Programme: Mechanical Engineering

Scheme of Instructions : **UG Diploma Level**

(EXIT COURSE after SY of Engineering)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Course Credits	Mode of Learning
1	EL (INTR)	ME-EC-0201	Industrial Training / Internship *	-	-	-	-	4	Offline
2	PCC	ME-EC-0202	Computer Aided Drafting Lab (Solid works, Catia)	-	-	8	8	4	Offline
		OR							
		ME-EC-0203	Workshop (CNC operations Lab)	-	-	8	8	4	Offline
			Total					**08**	

*Industrial training of 4 week duration

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Third Year B. Tech. in Mechanical Engineering

Semester – V (w.e.f. 2025-26)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	PCC	ME3501	Manufacturing and Automation	3	--	--	3	3	20	20	60	100
2	PCC	ME3502	Heat Transfer and Internal Combustion Engines	3	--	--	3	3	20	20	60	100
3	PCC	ME3503	Machine Design	3	1	--	4	4	20	20	60	100
4	PEC	ME35*4	Programme Elective - 01	3	--	--	3	3	20	20	60	100
5	MDM	ME35*5	Multi-disciplinary Minor - 03	3	--	--	3	3	20	20	60	100
6	OE	ME3506	Open Elective -03	2	--	--	2	2	20	20	60	100
7	PCC	ME3507	Heat Transfer and Internal Combustion Engines Lab	--	--	2	2	1	-	25	-	25
8	PEC	ME35*8	Programme Elective – 01 Lab	--	--	2	2	1	-	25	-	25
9	MDM	ME35*9	Multi-disciplinary Minor – 03 Lab	--	--	2	2	1	-	50	-	50
10	VSEC	ME 3510	Computer Integrated Manufacturing Lab and Workshop Practice – IV	--	--	2	2	1	-	50	50	100
			Total	**17**	**1**	**8**	**26**	**22**	**120**	**270**	**410**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	**11**	**4**	**6**	**1**	-	-	-
Cumulative Sum	**19**	**16**	**37**	**4**	**16**	**04**	**12**	-	**02**

PROGRESSIVE TOTAL CREDITS: 88+22=110

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Third Year B. Tech. in Mechanical Engineering

Semester – VI (w.e.f. 2025-26)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	PCC	ME3601	Control Engineering	3	--	--	3	3	20	20	60	100
2	PCC	ME3602	Kinematics and Dynamics of Machine	3	--	--	3	3	20	20	60	100
3	PCC	ME3603	Industrial Automation and Robotics	3	--	--	3	3	20	20	60	100
4	PCC	ME3604	Measurement and Metrology	3	--	--	3	3	20	20	60	100
5	PEC	ME36*5	Programme Elective - 02	3	--	--	3	3	20	20	60	100
6	MDM	ME36*6	Multi-disciplinary Minor - 04	2	--	--	2	2	20	20	60	100
7	PCC	ME3607	Control Engineering Lab	--	--	2	2	1	-	25	25	50
8	PCC	ME3608	Kinematics and Dynamics of Machine Lab	--	--	2	2	1	-	25	25	50
9	PCC	ME3609	Industrial Automation and Robotics Lab	--	--	2	2	1	-	25	-	25
10	PCC	ME3610	Measurement and Metrology Lab	--	--	2	2	1	-	25	-	25
11	EL	ME3611	Minor Project	--	--	2	2	1	-	50	-	50
			Total	**17**	**0**	**10**	**27**	**22**	**120**	**270**	**410**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	**-**	**-**	**16**	**3**	**2**	**-**	**-**	**1**	**-**
Cumulative Sum	**19**	**16**	**53**	**7**	**18**	**04**	**12**	**01**	**02**

PROGRESSIVE TOTAL CREDITS: 110+22 =132

Government College of Engineering, Karad

SCHEME OF INSTRUCTION

Programme: Mechanical Engineering

Scheme of Instructions: **UG Degree Level**

(EXIT COURSE after TY of Engineering)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Course Credits	Mode of Learning
1	EL (INTR)	ME-EC-0301	Industrial Training / Internship *	-	-	-	-	4	Offline
2	PCC	ME-EC-0302	Computer Aided Engineering Lab (ANSYS and MATLAB)	-	-	8	8	4	Offline
		OR							
		ME-EC-0303	Workshop (Non-conventional machining)	-	-	8	8	4	Offline
			Total					**08**	

*Industrial training of 4 weeks duration

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Final Year B. Tech. in Mechanical Engineering

Semester – VII (w.e.f. 2026-27)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	PCC	ME3701	Refrigeration and Air Conditioning	3	--	--	3	3	20	20	60	100
2	PCC	ME3702	Finite Element Analysis	3	--	--	3	3	20	20	60	100
3	PEC	ME37*3	Programme Elective - 03	3	--	--	3	3	20	20	60	100
4	EL	ME3704	Research Methodology	3	--	--	3	3	20	20	60	100
5	MDM	ME37*5	Multi-disciplinary Minor - 05	2	--	--	2	2	20	20	60	100
6	PCC	ME3706	Finite Element Analysis Lab	--	--	2	2	1	--	25	25	50
7	EL	ME3707	Seminar	--	--	2	2	1	--	25	--	25
8	EL	ME3708	Industrial Training	--	--	2	2	1	--	25	--	25
9	EL	ME3709	Project Phase I	--	--	10	10	5	--	100	100	200
			Total	**14**	**0**	**16**	**30**	**22**	**100**	**275**	**425**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	**7**	**3**	**2**	-	-	**7**	-
Cumulative Sum	**19**	**16**	**60**	**10**	**20**	**04**	**12**	**09**	**02**

PROGRESSIVE TOTAL CREDITS: 132+22 =154

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Final Year B. Tech. in Mechanical Engineering

Semester – VIII (Academic Mode) (w.e.f. 2026-27)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	PCC	ME3801	Mechatronics	3	--	--	3	3	20	20	60	100
2	PCC	ME3802	Noise and Vibration	3	--	--	3	3	20	20	60	100
3	PEC	ME38*3	Programme Elective - 04	2	--	--	2	2	20	20	60	100
4	PEC	ME38*4	Programme Elective - 05	3	--	--	3	3	20	20	60	100
5	MDM	ME38*5	Multi-disciplinary Minor - 06	2	--	--	2	2	20	20	60	100
6	PCC	ME3806	Mechatronics Lab	--	--	2	2	1	--	50	50	100
7	EL	ME3807	Project Phase II	--	--	16	16	8	--	100	100	200
			Total	**13**	**0**	**18**	**31**	**22**	**100**	**250**	**450**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	**7**	**5**	**2**	-	-	**8**	-
Cumulative Sum	**19**	**16**	**67**	**15**	**22**	**04**	**13**	**17**	**02**

PROGRESSIVE TOTAL CREDITS: 154+22 =176

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Final Year B. Tech. in Mechanical Engineering

Semester – VIII (Industry Mode) (w.e.f. 2026-27)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	MOOC (PEC)	ME3808	MOOC – I	-	-	-	-	4	-	-	100	100
2	MOOC (PEC)	ME3809	MOOC – II	-	-	-	-	4	-	-	100	100
3	MDM	ME3810	Multi-disciplinary Minor – 06 (MOOC)	--	--	--	--	2	-	-	100	100
4	EL	ME3811	Industry Project	--	--	--	-	12	-	250	250	500
			Total	**0**	**0**	**0**	**0**	**22**	**0**	**250**	**550**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	-	**8**	**2**	-	-	**12**	-
Cumulative Sum	**19**	**16**	**60**	**18**	**22**	**04**	**13**	**21**	**02**

PROGRESSIVE TOTAL CREDITS: 154+22 =176

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Mechanical Engineering

Proposed Scheme of Instructions: Final Year B. Tech. in Mechanical Engineering

Semester – VIII (Research Mode) (w.e.f. 2026-27)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME			
									MSE	ISE	ESE	TOTAL
1	MOOC (PEC)	ME3812	MOOC – I	-	-	-	-	4	-	-	100	100
2	MOOC (PEC)	ME3813	MOOC – II	-	-	-	-	4	-	-	100	100
5	MDM	ME3814	Multi-disciplinary Minor – 06 (MOOC)	-	-	-	-	2	-	-	100	100
3	EL	ME3815	Research Project	-	-	-	-	12	-	250	250	500
			Total	**0**	**0**	**0**	**0**	**22**	**0**	**250**	**550**	**800**

L- Lecture T-Tutorial P-Practical

MSE- Mid Semester Examination ISE- In Semester Evaluation

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	Basic Science Courses (BSC)	Engineering Science Courses (ESC)	Programme Core Course (PCC)	Programme Elective Course (PEC)	Open Elective other than particular program (OE/MDM)	Vocational and Skill Enhancement Course (VSEC)	Humanities Social Science and Management (HSSM)	Experiential Learning (EL)	Co-curricular And Extracurricular Activities (CCA)
Credits	-	-	-	**8**	**2**	-	-	**12**	-
Cumulative Sum	**19**	**16**	**60**	**18**	**22**	**04**	**13**	**21**	**02**

PROGRESSIVE TOTAL CREDITS: 154+22 =176

1. Basket of Basic Sciences Courses (BSC)

List of BSC courses offered Semester wise						
Semester I						
Sr.	**Course Code**	**Course**	**L**	**T**	**P**	**Credits**
1	**ME3101**	Applied Mathematics - I	3	1	--	**4**
2	**ME3102**	Applied Physics	3	--	--	**3**
3	**ME3106**	Applied Physics Lab	--	--	2	**1**
Semester II						
4	**ME3201**	Applied Mathematics - II	3	1	--	**4**
5	**ME3202**	Applied Chemistry	3	--	--	**3**
6	**ME3207**	Applied Chemistry Lab	--	--	2	**1**
Semester III						
7	**ME3301**	Mathematics for Mechanical Engineering	3	-	-	**3**
Semester IV						
8	**ME3411**	Environmental Science	2	-	-	**Audit**
					TOTAL	**19**

2. Basket of Engineering Sciences Courses (ESC)

List of ESC courses offered Semester wise						
Semester I						
Sr.	**Course Code**	**Course**	**L**	**T**	**P**	**Credits**
1	**ME3104**	Applied Mechanics	3	--	--	**3**
2	**ME3105**	Design Thinking	2	--	--	**2**
3	**ME3109**	Applied Mechanics Lab	-	-	2	**1**
Semester II						
4	**ME3203**	Engineering Graphics	3	--	--	**3**
5	**ME3204**	Basic Electrical & Electronics	3	--	--	**3**
6	**ME3206**	Programming For Problem Solving	2	--	--	**2**
7	**ME3208**	Engineering Graphics Lab	--	--	2	**1**
8	**ME3209**	Programming for Problem Solving Lab	-	-	2	**1**
					TOTAL	**16**

3. Basket of Programme Core Courses (PCC)

List of PCC courses offered Semester wise						
Semester I						
Sr.	**Course Code**	**Course**	**L**	**T**	**P**	**Credits**
1	**ME3103**	Basic Mechanical Engineering	3	**-**	**-**	**3**
2	**ME3107**	Basic Mechanical Engineering Lab	**-**	**-**	2	**1**
Semester III						
3	**ME3302**	Engineering Thermodynamics	3	-	**-**	**3**
4	**ME3303**	Material Engineering	3	**-**	**-**	**3**
5.	**ME3308**	Engineering Thermodynamics Lab	-	**-**	2	**1**
6	**ME3309**	Material Engineering Lab	-	-	2	**1**
7	**ME3310**	Machine Drawing and Computer Aided Drafting Lab	**-**	**-**	2	**1**
Semester IV						
8	**ME3401**	Fluid Mechanics & Machines	3	-	**-**	**3**
9	**ME3402**	Strength of Materials	3	-	**-**	**3**
10	**ME3403**	Numerical Methods	3	**-**	**-**	**3**
11	**ME3404**	Machine Tools and Processes	3	**-**	**-**	**3**
12	**ME3410**	Fluid Mechanics & Machines Lab	**-**	**-**	2	**1**
Semester V						
13	**ME3501**	Manufacturing and Automation	3	**-**	**-**	**3**
14	**ME3502**	Heat Transfer Internal Combustion Engines	3	**-**	**-**	**3**
15	**ME3503**	Machine Design	3	1	**-**	**4**
16	**ME3507**	Heat Transfer and Internal Combustion Engines Lab	**-**	**-**	2	**1**

Semester VI						
17	**ME3601**	Control Engineering	3	**-**	**-**	**3**
18	**ME3602**	Kinematics and Dynamics of Machine	3	**-**	**-**	**3**
19	**ME3603**	Industrial Automation and Robotics	3	**-**	**-**	**3**
20	**ME3604**	Measurement and Metrology	3	**-**	**-**	**3**
21	**ME3607**	Control Engineering Lab	**-**	**-**	2	**1**
22	**ME3608**	Kinematics and Dynamics of Machine Lab	**-**	**-**	2	**1**
23	**ME3609**	Industrial Automation and Robotics Lab	**-**	**-**	2	**1**
24	**ME3610**	Measurement and Metrology Lab	**-**	**-**	2	**1**
Semester VII						
25	**ME3701**	Refrigeration and Air Conditioning	3	**-**	**-**	**3**
26	**ME3702**	Finite Element Analysis	3	**-**	**-**	**3**
27	**ME3706**	Finite Element Analysis Lab	-	**-**	2	**1**
Semester VIII						
28	**ME3801**	Mechatronics	3	**-**	**-**	**3**
29	**ME3802**	Noise and Vibration	3	**-**	**-**	**3**
30	**ME3806**	Mechatronics Lab	**-**	**-**	2	**1**
					TOTAL	**67**

4. Faculty-wise basket of Programme Elective Courses (PEC)

	Elective 01 (Sem. V)	**Elective 02** (Sem. VI)	**Elective 03** (Sem. VII)	**Elective 04** (Sem. VIII)	**Elective 05** (Sem. VIII)
Thermal and Power	**ME3514:** Energy and power Engineering	**ME3615**: Computational Fluid Dynamics	**ME3713:** Industrial Fluid Power	**ME3823:** Cryogenics	**ME3824:** Electric Vehicle
Design	**ME3524:** Mechanical Elements	**ME3625:** Failure Analysis	**ME3723:** Stress Analysis	**ME3833:** Tribology	**ME3834:** MEMS and NEMS
Production	**ME3534:** Additive Manufacturing	**ME3635:** Non-Conventional Machining	**ME3733:** Advanced Casting Technology	**ME3843:** Condition Monitoring	**ME3844:** Welding Technology
Management	**ME3544:** Operations Research	**ME3645:** Process Planning & Cost Estimation	**ME3743:** Industrial Engineering	**ME3853:** Total Quality Management	**ME3854:** Supply Chain and Logistics

5. Basket of Open Elective courses (OE)

Open Elective 01	(Sem. III)	**ME3305**	Industrial Instrumentation
Open Elective 02	(Sem. IV)	**ME3406**	Engineering Economics/Industrial Safety
Open Elective 03	(Sem. V)	**ME3506**	Entrepreneurship Development

6. Basket of Multi-Disciplinary Minor Courses

	Automation and Robotics	Condition Monitoring	Additive Manufacturing	Entrepreneurial Studies	Management and Finance	Energy Engineering
Multi- Disciplinary Minor Course – 01	**ME3314:** Sensors, Drives and Actuators for Industrial Automation	**ME3324:** Maintenance Practices	**ME3334:** Additive Manufacturing Processes	**ME3344:** Quantitative Techniques in Management	**ME3354:** Microeconomics	**ME3364:** Energy Conservation and Management
Multi- Disciplinary Minor Course – 02	**ME3415:** Embedded Systems for Automation	**ME3425:** Principles of Vibration	**ME3435:** Rapid Tooling And Industrial Applications	**ME3445:** Financial Services and Institutional Supports	**ME3455:** Corporate Social Responsibility	**ME3465:** Steam Engineering
Multi- Disciplinary Minor Course – 03	**ME3515:** Fluid Power and factory Automation	**ME3525:** Data Acquisition and Signal Processing	**ME3535:** CAD for Additive Manufacturing	**ME3545:** Business Systems	**ME3555:** Principles of Accounting	**ME3565:** Nuclear Engineering
Multi- Disciplinary Minor Course – 04	**ME3616:** Robot Kinematics and Dynamics	**ME3626:** Fault Analysis	**ME3636:** Powder Metallurgy	**ME3646:** Human Resource Management	**ME3656:** Business Intelligence	**ME3666:** Gas Turbines
Multi- Disciplinary Minor Course – 05	**ME3715:** Robotics for Industrial Automation	**ME3725:** FEA and Modal Analysis	**ME3735:** Sustainable Manufacturing	**ME3745:** Strategic Management	**ME3755:** Marketing research	**ME3765:** Design of Solar and Wind Energy Devices
Multi- Disciplinary Minor Course - 06	**ME3815:** Mathematical Approach to Robotic Manipulators	**ME3825:** Equipment Testing and Diagnostics	**ME3835:** Product Life Cycle Management	**ME3845:** Compensation Management	**ME3855:** Corporate Governance and Business Ethics	**ME3865:** Energy Analysis of Thermal Systems

7. Basket of Vocational Skill Enhancement Courses (VSEC)

List of VSEC Courses offered Semester wise						
Semester I						
Sr.	**Course Code**	**Course**	**L**	**T**	**P**	**Credits**
1	**ME3110**	Workshop practice I	--	--	2	**1**
Semester II						
2	**ME3210**	Workshop practice II	--	--	2	**1**
Semester IV						
3	**ME3409**	Workshop practice III	--	--	2	**1**
Semester V						
4	**ME3510**	Computer Integrated Manufacturing Lab and Workshop Practice - IV	--	--	2	**1**
					TOTAL	**04**