

GOVERNMENT COLLEGE OF ENGINEERING KARAD

(An Autonomous Institute of Government of Maharashtra)



DEPARTMENT OF MECHANICAL ENGINEERING

PROPOSED SCHEME OF INSTRUCTION FOR
ADDITIONAL CREDIT COURSES (Online Mode)
(Honours, Honours with Research and Double Minor)

AS PER NEP-2020

W.E.F

AY 2024-25

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."

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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.

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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.

Scheme of Instructions for
‘Honours’
Online Mode (MOOC’s)

Government College of Engineering, Karad

PROPOSED SCHEME OF INSTRUCTION

B.Tech Mechanical Honors (MOOC) (wef 2024-25)

Guidelines

- Selection of the relevant MOOC course should be with the prior permission of Head of Department
- To get B. Tech in Mechanical Engineering with Honors and Multidisciplinary Minor student need to earn extra 18 credits by completing 5 courses (One course / semester) as mentioned below.
- Honor courses can be completed through online platforms (NPTEL/SWAYAM).
- Duration of MOOC Course should be 8-12 weeks.
- Students can choose any one specialization given by the department and complete all the assigned courses under the specialization to earn total 194 credits which consists of 176 credits of regular Multidisciplinary Minor courses and 18 credits of Honor courses.
- Student should complete the MOOC course certification and submit the copy of certificate to controller of examinations, GCE, Karad through program coordinator

Sr. No.	Course Code	Course Title	Credits	Major Semester
1	MEHM-04*1	Mechanical Honors Course 01 (MOOC)	04	IV
2	MEHM-05*1	Mechanical Honors Course 02 (MOOC)	04	V
3	MEHM-06*1	Mechanical Honors Course 03 (MOOC)	04	VI
4	MEHM-07*1	Mechanical Honors Course 04 (MOOC)	03	VII
5	MEHM-08*1	Mechanical Honors Course 05 (MOOC)	03	VIII

PROGRESSIVE TOTAL CREDITS: 18

Government College of Engineering, Karad

PROPOSED SCHEME OF INSTRUCTION

B.Tech Mechanical Honors (MOOC)

BASKET OF MOOC 's FOR

THE AWARD OF DEGREE B.TECH MECHANICAL HONORS

SPECIALIZATION	THERMAL AND POWER	DESIGN	PRODUCTION
Mechanical Honors Course 01	MEHM-0411: Thermodynamics	MEHM-0421: Work system design	MEHM-0431: Industry 4.0 and IIoT
Mechanical Honors Course 02	MEHM-0511: Applied Thermodynamics	MEHM-0521: Design Practice	MEHM-0531: Integrated Product Design
Mechanical Honors Course 03	MEHM-0611: Microfluidics and Nano fluidics	MEHM-0621: Engineering Fracture Mechanics	MEHM-0631: Sustainable Manufacturing
Mechanical Honors Course 04	MEHM-0711: Two Phase Flow And Heat Transfer	MEHM-0721: Optimization from fundamentals	MEHM-0731: Product life-Cycle Management
Mechanical Honors Course 05	MEHM-0811: Power Plant Engineering	MEHM-0821: Vibrations Of Plates And Shells	MEHM-0831: Enterprise Resource Planning

Scheme of Instructions for
‘Honors with Research’
Online Mode (MOOC’s)

Government College of Engineering, Karad

PROPOSED SCHEME OF INSTRUCTION

Programme: B.Tech Mechanical Honors with Research (wef 2026-27)

Guidelines

Students will work on research project for 18 credits in the semester VII –VIII in the respective Major Engineering/Technology discipline. These 18 credits will be over and above the 176 credits prescribed for four year multidisciplinary bachelor's degree in Engg/Tech Program.

Minor: Semester – I (Major: Semester – VII)

Sr. No.	Course Code	Course Title	L	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME		
							PBE-I	PBE-II	TOTAL
1	MEHRM-0701	Intellectual Property Rights (MOOC)	--	--	--	03	--	--	--
2	MEHRM-0702	Research Project Phase -I	--	12	12	06	100	100	200
		Total	--	12	12	09	100	100	200

Minor: Semester – II (Major: Semester – VIII)

Sr. No.	Course Code	Course Title	L	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME		
							PBE-I	PBE-II	TOTAL
1	MEHRM-0801	Research Project Phase -II	--	18	18	09	100	100	200
		Total	--	18	18	09	100	100	200

L- Lecture

P-Practical

PBE-I- Project-based Examination (For Laboratory Mid Semester Performance)

PBE- II Project-based Examination (For Laboratory End Semester Performance)

PROGRESSIVE TOTAL CREDITS: 18

Scheme of Instructions for

‘Double Minor-’

Online Mode (MOOC’s)

Government College of Engineering, Karad

PROPOSED SCHEME OF INSTRUCTION

Programme: Double Minors- Robotics (wef 2024-25)

Guidelines

- Selection of the relevant MOOC course should be with the prior permission of Head of Department
- To get B. Tech in Mechanical Engineering with Double Minor student need to earn extra 18 credits by completing 5 courses (One course / semester) as mentioned below.
- Honor courses can be completed through online platforms (NPTEL/SWAYAM).
- Duration of MOOC Course should be 8-12 weeks.
- Students can choose any one specialization given by the department and complete all the assigned courses under the specialization to earn total 194 credits which consists of 176 credits of regular Multidisciplinary Minor courses and 18 credits of Honor courses.
- Student should complete the MOOC course certification and submit the copy of certificate to controller of examinations, GCE, Karad through program coordinator

Sr. No.	Course Code	Course Title	Credits	Major Semester
1	MEDM-0401	Robotics	04	IV
2	MEDM-0501	Industrial Robotics : Theories for Implementation	04	V
3	MEDM-0601	Robotics and Control : Theory and Practice	04	VI
4	MEDM-0701	Mechanics and Control of Robotic Manipulators	03	VII
5	MEDM-0801	Advanced Robotics	03	VIII

