

## **ELECTRICAL ENGINEERING**

### **Vision:**

To develop intellectual potentials with excellence in electrical engineering & technology for the global needs.

### **Mission:**

1. Empowering students with state-of-art knowledge, technological skills & ethics.
2. Provide research environment for sustainable technical growth in the area of power and energy.
3. Providing effective solutions for industries through research and consultancy.
4. Exposure to standard electrical safety measures and practices.
5. Encourage new and non-conventional energy technology for sustainable development and environmental stewardship.

### **B. Tech. in Electrical Engineering**

#### **Programme Educational Objectives (PEO)**

1. To provide technical knowledge in electrical engineering to excel in electrical utility & services.
2. To nurture the students to become successful engineer with administrative acumen to ethically handle the critical situations timely.
3. To prepare and motivate the students for higher education, research and continuous learning in multi-disciplinary areas with innovative ideas for sustainable development.

#### **Programs Outcomes (POs):**

Students will demonstrate the ability to-

1. Apply the knowledge of mathematics, science, and Engineering in all aspects of Electrical Engineering.
2. To formulate the techniques of using appropriate tools to analyze and/or fabricate electrical systems.
3. Design of different parts of electrical machines, drives & power system network.
4. Align with and upgrade to higher learning and research activities.
5. Model real life problems using different hardware and software platforms, both offline and in real-time.
6. Possess an appreciation of professional, societal, environmental, and ethical issues and proper use of renewable resources.
7. Develop the awareness about non-conventional sources of energy for sustainable development.
8. Promote the good practices of electrical engineering with high ethical values.
9. Work in a team and comprehend his/her scope of work, deliverables and issues in which help is needed by other members of the team.

10. To communicate effectively and to prepare formal technical plans leading to solutions and detailed reports for electrical systems.
11. To be familiar with project management problems and basic financial principles for a multi-disciplinary work such as biomedical instrumentation.
12. A recognition of the need for identifying contemporary issues due to changing technical scenario and an ability to engage in life-long learning to update himself/herself.

**Department of Electrical Engineering**  
**Madan Mohan Malaviya University of Technology Gorakhpur**

**PEOs, POs and PSOs for M.Tech. in Control and Instrumentation**

The M. Tech. in Control and Instrumentation programme has following Program Educational Objectives (PEOs), Program Outcomes (POs) and Program Specific Outcomes (PSOs) of the Program:

**Program Educational Objectives (PEOs)**

**PEO1:** To create postgraduates with advanced knowledge of control and instrumentation engineering who can contribute towards specialized requirements in engineering & technology.

**PEO2:** To create postgraduates with adequate abilities in control and instrumentation who can progress to be engineering designers, developers, and researchers to fulfil the necessities of modern industries in its domain.

**PEO3:** To develop amongst students the capacity to figure, formulate, analyse and solve real life problems confronted in domain industries.

**PEO4:** To exhibit professionalism, ethical attitude, communication ability collaboration in their profession and adapt to current trends through lifelong learning.

**Program Outcomes (POs)**

**PO1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems in control and instrumentation engineering domain.

**PO2: Problem analysis:** Identify, formulate, review research literature, and analyse complex control and instrumentation engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3: Design/development of solutions:** Design solutions for complex control and instrumentation 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 in the control and instrumentation engineering & technology.

**PO5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex control and instrumentation engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge of control and instrumentation engineering 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 teamwork: Function effectively as an individual. and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex control and instrumentation 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 in control and instrumentation engineering & technology domain.

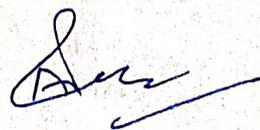
#### **Program Specific Outcomes (PSOs)**

PSO1: To provide the effective and efficient knowledge of control systems engineering & technology.

PSO2: To provide the effective and efficient knowledge of instrumentation engineering & technology.

PSO3: To create control & instrumentation engineering specialized postgraduates to meet the global needs in modern industries, academic & research organizations.

PSO4: To provide a platform to develop new and innovative projects that may improve local industry needs.



विभागाध्यक्ष

विद्युत अभियन्त्राण विभाग

मदन मोहन मालवीय प्रौद्योगिकी विश्वविद्यालय  
गोरखपुर-273010 (उत्तर प्रदेश)

## PEOs, POs and PSOs for M.Tech. in Power Electronics and Drives

The M.Tech. in Power Electronics and Drives programme has following Program Educational Objectives (PEOs), Program Outcomes (POs) and Program Specific Outcomes (PSOs) of the Program:

### Program Educational Objectives (PEOs)

PEO1: To create postgraduates with advanced knowledge of power electronics and drives engineering who can contribute towards specialized requirements in engineering & technology.

PEO2: To create postgraduates with adequate abilities in power electronics and drives who can progress to be engineering designers, developers, and researchers to fulfil the necessities of modern industries in its domain.

PEO3: To develop amongst students the capacity to figure, formulate, analyze and solve real life problems confronted in domain industries.

PEO4: To exhibit professionalism, ethical attitude, communication ability collaboration in their profession and adapt to current trends through lifelong learning.

### Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems in power electronics and drives engineering & technology domain.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex power electronics and drives problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex power electronics and drives 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 in the power electronics and drives engineering & technology.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex power electronics and drives activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge of power electronics and drives 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 teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex power electronics and drives engineering & technology 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.

*[Handwritten Signature]*  
विद्यया ऽ मृतमश्नुते  
मृतमश्नुते विद्या  
273010 (अंतर प्र)

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 in power electronics and drives engineering & technology domain.

### Program Specific Outcomes (PSOs)

PSO1: To provide the effective and efficient knowledge of power electronics engineering & technology.

PSO2: To provide the effective and efficient knowledge of electrical drives engineering & technology.

PSO3: To create power electronics & drives engineering specialized postgraduates to meet the global needs in modern industries, academic & research organizations.

PSO4: To provide a platform to develop new and innovative projects that may improve local industry needs.



विभागाध्यक्ष

विद्युत अभियन्त्रण विभाग

मदन मोहन मालवीय प्रौद्योगिकी विश्वविद्यालय

गोरखपुर-273010 (उत्तर प्रदेश)