

# ETHICS AND INTEGRITY IN MECHANICAL ENGINEERING RESEARCH

Ethics and integrity are critical in Mechanical Engineering research as they ensure the validity, reliability, and social responsibility of scientific discoveries. Researchers are expected to adhere to ethical standards that promote honesty, transparency, and respect for intellectual property and the well-being of others.





#### Importance of Ethics in Mechanical Engineering Research

- 1. Ethics in research ensures that findings are credible and free from manipulation or fabrication.
- 2. It promotes a culture of trust between researchers, the public, and other stakeholders.
- 3. Ethical research respects the safety, health, and environmental impacts of engineering projects.





## Key Ethical Principles in Mechanical Engineering Research

- 1. Honesty: Researchers must report findings truthfully, avoiding falsification, fabrication, or omission of data.
- 2. Integrity: Adhering to professional standards, even when results are unfavorable or unexpected.
- 3. Objectivity: Avoiding personal bias or conflicts of interest in conducting research and interpreting results.





- 4. Respect for Intellectual Property: Properly citing sources, respecting patents, and avoiding plagiarism.
- 5. Social Responsibility: Ensuring that research and its applications benefit society and do not harm individuals or the environment.





# Integrity in the Research Process

- 1. Data Integrity: Data should be accurately collected, processed, and presented without manipulation.
- 2. Research Collaboration: Researchers must work collaboratively and fairly distribute credit among all contributors.





- 3. Peer Review: Engaging in the peer-review process with honesty and fairness, providing constructive and unbiased feedback.
- 4. Compliance with Regulations: Adhering to legal and institutional requirements, such as safety protocols and ethical reviews.





### Ethical Challenges in Mechanical Engineering Research

- 1. Conflicts of Interest: When personal or financial interests affect the objectivity of research.
- 2. Plagiarism: Using another person's work without proper citation or acknowledgment.
- 3. Environmental Impact: Research that leads to environmentally harmful technologies or processes raises ethical concerns.





**Consequences of Unethical Behavior in Research** 

- 1. Loss of Credibility: Unethical behavior can lead to retractions of published work and loss of professional credibility.
- 2. Legal and Professional Consequences: Breaching ethical codes may lead to sanctions, legal action, or loss of licenses.
- 3. Negative Impact on Society: Unethical research can harm public trust and lead to harmful technologies or practices.





# Promoting Ethics and Integrity in Research

- 1. Education and Training: Providing regular training on ethics and integrity for researchers.
- 2. Transparency: Openly sharing research data, methodologies, and findings to promote accountability.





- 3. Mentorship: Senior researchers should mentor young professionals on the importance of ethics and integrity in research.
- 4. Ethical Review Boards: Involving ethics committees to review research proposals, ensuring they meet ethical standards.



UTM Credentials

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### **Conclusion**

Ethics and integrity are fundamental to conducting trustworthy and responsible research in Mechanical Engineering. By adhering to these principles, researchers contribute to the advancement of knowledge while ensuring the safety, well-being, and sustainability of society.

