



बिरला प्रौद्योगिकी संस्थान BIRLA INSTITUTE OF TECHNOLOGY

(वि० अनु० आ० अधिनियम १९५६ की धारा ३ के तहत मानित विश्वविद्यालय || A Deemed to be University u/s 3 of UGC Act, 1956)
मेसरा, राँची ८३५२१५ (भारत) || MESRA, RANCHI 835 215 (INDIA)

Institute Vision

To become a Globally Recognized Academic Institution in consonance with the social, economic and ecological environment, striving continuously for excellence in education, research and technological service to the National needs.

Institute mission

1. To educate students at Undergraduate, Post Graduate, Doctoral, and Post Doctoral levels to perform challenging engineering and managerial jobs in industry.
2. To provide excellent research and development facilities to take up Ph.D. programmes and research projects.
3. To develop effective teaching and learning skills and state of art research potential of the faculty.
4. To build national capabilities in technology, education and research in emerging areas.
5. To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society.



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Department vision

To become an internationally recognized centre of excellence in academics, research and technological services in the area of Electrical and Electronics Engineering and related interdisciplinary fields.

Department mission

1. Imparting strong fundamental concepts to students and motivate them to find innovative solutions to engineering problems independently.
2. Developing engineers with managerial attributes capable of applying appropriate technology with responsibility.
3. Creation of congenial atmosphere and ample research facilities for undertaking quality research to achieve national and international recognition by faculty and students.
4. To strive for internationally recognized publication of research papers, books and to obtain patent and copyrights.
5. To provide excellent technological services to industry for the benefit of society.



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Program Educational Objectives (PEOs)

- PEO1. To develop capability to understand the fundamentals of Science and Electrical & Electronics Engineering for analyzing engineering problems with futuristic approach.
- PEO2. To foster a confident and competent graduate capable of solving real life practical engineering problems fulfilling the obligation towards society.
- PEO3. To inculcate an attitude for identifying and undertaking developmental work both in industry as well as in academic environment with emphasis on continuous learning enabling to excel in competitive participations at global level.
- PEO4. To nurture and nourish effective communication and interpersonal skills to work in a team with a sense of ethics and moral responsibility for achieving goal.



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Mapping of PEOs with Mission

PEO Statements	M1	M2	M3	M4	M5
PEO1: To develop capability to understand the fundamentals of Science and Electrical & Electronics Engineering for analyzing engineering problems with futuristic approach.	3	3	3	2	3
PEO2: To foster a confident and competent graduate capable of solving real life practical engineering problems fulfilling the obligation towards society.	3	3	2	2	2
PEO3: To inculcate an attitude for identifying and undertaking developmental work both in industry as well as in academic environment with emphasis on continuous learning enabling to excel in competitive participations at global level.	3	3	3	2	3
PEO4: To nurture and nourish effective communication and interpersonal skills to work in a team with a sense of ethics and moral responsibility for achieving goal.	2	2	1	3	2

Legend

3	Strong Correlation
2	Moderate Correlation
1	Low Correlation



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List of Program Outcomes (POs)

- 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 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)



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List of Program Specific Outcomes (PSOs)

- PSO1. Pragmatic professional exposure in the domain of Power Engineering, Power Electronics, Measurement, and Control through systematically designed courses, laboratory contents, projects, and commensurate electives.
- PSO2. Development of analytical and designed skills for electrical & electronic systems as well as multidisciplinary areas of engineering utilizing appropriate conventional and modern tools.
- PSO3. Holistic amalgamation of managerial skills and research aptitude to strengthen industry-academia collaboration.



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The Knowledge and Attitude Profile (WKs)

- WK1. Natural and social sciences:** A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
- WK2. Mathematics:** Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline
- WK3. Engineering fundamentals:** A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline
- WK4. Specialist knowledge:** Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
- WK5. Engineering design & operations:** Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area
- WK6. Engineering practice:** Knowledge of engineering practice (technology) in the practice areas in the engineering discipline
- WK7. Role of engineering in society:** Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
- WK8. Research literature:** Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues
- WK9. Ethics and conduct:** Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes



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Mapping of POs and WKs

Program Outcomes (POs) Knowledge and Attitude Profile (WKs)		Natural and social sciences	Mathematics	Engineering fundamentals	Specialist knowledge	Engineering design & operations	Engineering practice	Role of engineering in society	Research literature	Ethics and conduct
		WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
Engineering Knowledge	PO1	✓	✓	✓	✓					
Problem Analysis	PO2	✓	✓	✓	✓					
Design/ Development of Solutions	PO3					✓				
Conduct Investigations of Complex Problems	PO4								✓	
Engineering Tool Usage	PO5		✓				✓			
The Engineer and the World	PO6	✓				✓		✓		
Ethics	PO7									✓
Individual and Collaborative Team work	PO8									
Communication	PO9									
Project Management and Finance	PO10									
Life-Long Learning	PO11								✓	
Program Specific Outcome-1	PSO1		✓	✓	✓	✓	✓		✓	
Program Specific Outcome-2	PSO2		✓	✓		✓	✓		✓	
Program Specific Outcome-3	PSO3	✓					✓	✓	✓	✓