

COEP Technological University

Department of Metallurgy and Materials Engineering

Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Postgraduate (M.Tech. - Materials Engineering)

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Postgraduate students will demonstrate:

PEO I: To provide students with in-depth knowledge of Materials Engineering such as scientific principles of fabrication, phase transformations, mechanical treatment, heat treatment, structure-property correlations and service behaviour of various types of materials necessary to formulate, solve and analyze critical engineering problems.

PEO II: To train the students for successful careers in metallurgical and manufacturing industry, academics, in the field of research and development that meet the needs of Indian and multinational companies, R&D organizations and also prepare them for higher studies.

PEO III: To make the students capable of solving unfamiliar problems through literature survey, deciding a suitable research methodology and conducting interdisciplinary/collaborative-multidisciplinary scientific research as per the need.

PEO IV: To inculcate in students the art of reflective learning, build hands-on experimental skills, make them familiar with modern engineering software tools and equipments, so as to make them capable of working independently or as a part of a team for successful project implementations in their professional life.

PEO V: To inculcate in student's leadership qualities, techno-economical considerations, an aptitude for life-long learning, and introduce in them the professional ethics and codes.

PEO VI: To develop the students' abilities in communicating technical information in both written and oral form.

PROGRAM OUTCOMES (POs)

The Postgraduate Students will demonstrate:

PO1 (In-depth Knowledge & Synthesis):

Acquire in-depth knowledge of Materials Engineering so as to develop an ability to discriminate, evaluate, analyze and synthesize existing and futuristic needs in global perspective towards improvement of materials.

PO2 (Critical Analysis & Research):

Critically analyze complex engineering problems related to Materials Engineering and apply independent judgment for synthesizing information to make intellectual and/or creative advances for conducting research in a wider theoretical, practical and policy context.

PO3 (Lateral Thinking & Optimal Solutions):

Think laterally and originally, conceptualize and solve engineering problems related to Materials Engineering to evaluate a wide range of potential solutions for those problems and

arrive at feasible, optimal solutions after considering public health and safety, cultural, societal and environmental factors in the core areas of expertise.

PO4 (Research Methodology & Contribution):

Extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyze and interpret data, demonstrate higher order skill and view things in a broader perspective, contribute individually/in group(s) to the development of scientific/technological knowledge in the field of Materials Engineering and other domains of engineering.

PO5 (Modern Tools & Characterization):

Create, select, learn and apply appropriate fabrication techniques, resources, and modern characterization techniques and software-tools including prediction and modelling to Materials Engineering and allied engineering activities with an understanding of the limitations.

PO6 (Collaborative Research & Teamwork):

Possess knowledge and understanding of group dynamics, recognize opportunities and contribute positively to collaborative-multidisciplinary scientific research, demonstrate a capacity for self-management and teamwork, decision-making based on open mindedness, objectivity and rational analysis in order to achieve common goals and further the learning of themselves as well as others.

PO7 (Project Management & Techno-Economics):

Demonstrate knowledge and understanding of engineering and techno-economical aspects and apply the same to one's own work, as a member and leader in a team, implement projects efficiently in Materials Engineering and other domains of engineering.

PO8 (Technical Communication):

Communicate with the engineering community, and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations, and give and receive clear instructions.

PO9 (Life-long Learning):

Recognize the need for and have the preparation and ability to engage in life-long learning independently, with a high level of enthusiasm and commitment to improve knowledge and competence continuously.

PO10 (Ethics & Societal Responsibility):

Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.

PO11 (Reflective Learning & Self-Correction):

Observe and examine critically the outcomes of one's actions and make corrective measures subsequently and learn from mistakes without depending on external feedback.

COEP Technological University

Department of Metallurgy and Materials Engineering

Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Postgraduate (M.Tech. – Process Metallurgy (New Material Processes Technology))

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Postgraduate students will demonstrate:

PEO I: To impart students the in-depth knowledge of science and technology of synthesis and processing of various materials, so as to control their properties while manufacturing the products and also to formulate, solve and analyze critical engineering problems.

PEO II: To train the students for successful careers in materials processing and manufacturing industry, academics, in the field of research and development that meet the needs of Indian and multinational companies, R&D organizations and also prepare them for higher studies.

PEO III: To make the students capable of solving unfamiliar problems through literature survey, deciding a suitable research methodology and conducting interdisciplinary/collaborative-multidisciplinary scientific research as per the need.

PEO IV: To inculcate in students the art of reflective learning, build hands-on experimental skills, make them familiar with modern engineering software tools and equipments, so as to make them capable of working independently or as a part of a team for successful project implementations in their professional life.

PEO V: To inculcate in students leadership qualities, techno-economical considerations, an aptitude for life-long learning, and introduce in them the professional ethics and codes.

PEO VI: To develop the students' abilities in communicating technical information in both written and oral form.

PROGRAM OUTCOMES (POs)

The Postgraduate Students will demonstrate:

PO1 (In-depth Knowledge & Synthesis):

Acquire in-depth knowledge of Materials Engineering so as to develop an ability to discriminate, evaluate, analyze and synthesize existing and futuristic needs in global perspective towards improvement of materials.

PO2 (Critical Analysis & Research):

Critically analyze complex engineering problems related to Materials Engineering and apply independent judgment for synthesizing information to make intellectual and/or creative advances for conducting research in a wider theoretical, practical and policy context.

PO3 (Lateral Thinking & Optimal Solutions):

Think laterally and originally, conceptualize and solve engineering problems related to Materials Engineering to evaluate a wide range of potential solutions for those problems and

arrive at feasible, optimal solutions after considering public health and safety, cultural, societal and environmental factors in the core areas of expertise.

PO4 (Research Methodology & Contribution):

Extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyze and interpret data, demonstrate higher order skill and view things in a broader perspective, contribute individually/in group(s) to the development of scientific/technological knowledge in the field of Materials Engineering and other domains of engineering.

PO5 (Modern Tools & Characterization):

Create, select, learn and apply appropriate fabrication techniques, resources, and modern characterization techniques and software-tools including prediction and modelling to Materials Engineering and allied engineering activities with an understanding of the limitations.

PO6 (Collaborative Research & Teamwork):

Possess knowledge and understanding of group dynamics, recognize opportunities and contribute positively to collaborative-multidisciplinary scientific research, demonstrate a capacity for self-management and teamwork, decision-making based on open mindedness, objectivity and rational analysis in order to achieve common goals and further the learning of themselves as well as others.

PO7 (Project Management & Techno-Economics):

Demonstrate knowledge and understanding of engineering and techno-economical aspects and apply the same to one's own work, as a member and leader in a team, implement projects efficiently in Materials Engineering and other domains of engineering.

PO8 (Technical Communication):

Communicate with the engineering community, and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations, and give and receive clear instructions.

PO9 (Life-long Learning):

Recognize the need for and have the preparation and ability to engage in life-long learning independently, with a high level of enthusiasm and commitment to improve knowledge and competence continuously.

PO10 (Ethics & Societal Responsibility):

Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.

PO11 (Reflective Learning & Self-Correction):

Observe and examine critically the outcomes of one's actions and make corrective measures subsequently and learn from mistakes without depending on external feedback.