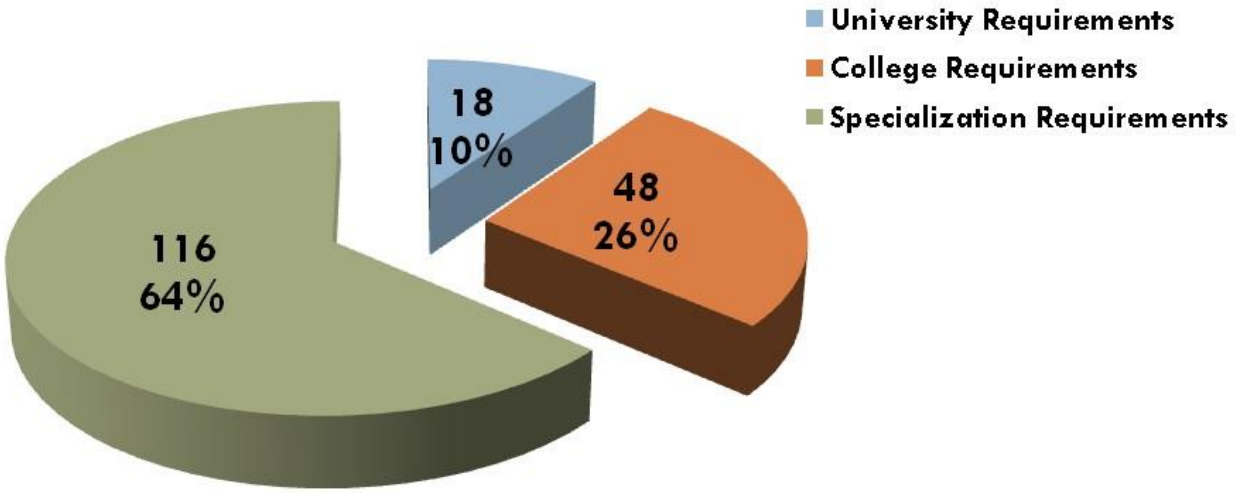
Materials Engineering Program



Materials Engineering Mission and Goals

Program Mission

The mission of materials engineering program is to provide thegraduates with awell-rounded engineering education with specific emphasis on materials science and engineering. The program aims not only to cope the daily development in engineering materials world but even to have a leading role in this development in industry and academia by providing a graduate of solid scientific foundation and developing his creative thinking regarding processing, structure, properties, and performance of materials.

Program Goals

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University Requirements

The student will study (6) General Education Elective Courses (humanities) selected by him from the following list of courses, with a total of (18) credit hours.

Course Code	Course Title	Credit Hours
HUM 011	English Language	0
HUM 012	German Language	3
HUM 013	Technical Writing and Communication	3
HUM 014	Engineering Profession, Practice, and Responsibilities	3
HUM 111	Engineering Economy	3
HUM 112	Health and Wellness	3
HUM 211	Impact of Technology on Society	3
HUM 212	Introduction to Marketing	3
HUM 311	Engineering Management	3
HUM 312	Human Resource Management	3
HUM 313	Engineering Law	3

College Requirements

Basic Science Courses

Student must study the following list of courses as basic science requirements:

Course Code	Course Title	Credit Hours
PHM 012	Calculus for Engineering (1)	3
PHM 013	Calculus for Engineering (2)	3
PHM 014	Linear Algebra and Analytical Geometry	3
PHM 022	Waves, Electricity, and Magnetic Fields	3
PHM 032	Engineering Mechanics (1) - Statics	3
PHM 033	Engineering Mechanics (2) - Dynamics	3
PHM 042	General Chemistry	3
PHM 113	Calculus for Engineering (3)	3
PHM 114	Statistics and Probability for Engineering	3
PHM 115	Differential Equations and Partial Differential Equations	3

Basic Engineering Courses

Student must study the following list of courses as Basic Engineering requirements:

Course Code	Course Title	Credit Hours
CSE 012	Engineering Computation	3
MDP 024	Production Engineering	3
MDP 061	Engineering Design and Graphics	4
MEP 112	Thermodynamics	3
MDP 132	Structures and Properties of Materials	3

General Specialization Courses for Materials Engineering Program

Course Code	Course Title	Credit Hours
PHM 123	Modern Physics and Quantum Mechanics	3
MEP 131	Fluid Dynamics	3
MDP 133	Crystalline Structures of Materials	4
MDP 141	Mechanical Engineering Measurements	3
PHM 141	Introduction to Organic Chemistry	3
PHM 142	Reaction Kinetics and Chemical Analysis	3
MDP 162	Mechanical Engineering Drawing	3
MDP 222	Design and Analysis of Experiments	3
MEP 222	Heat and Mass Transfer	4
ECE 231	Materials for Electronic Applications	3
MDP 231	Material Testing	3
MDP 232	Mechanical Behavior of Materials	3
MDP 233	Phase Transformations and Heat Treatment	4
MDP 234	Glass, Ceramics, and Binding Materials	3
PHM 241	Electrochemistry	3
PHM 242	Polymer Chemistry	3
MDP 253	Stress Analysis	3
MDP 311	Composites Technology	3
MDP 326	Quality Control	3
MDP 332	Polymer Materials	3
MDP 333	Modern Steel Making	3
MDP 334	Welding Technology and Metallurgy	3
MDP 335	Failure Analysis	3
MDP 336	Biomedical Materials	3
MDP 337	Corrosion	4
MDP 356	FE and Computational Materials Engineering	4
MDP 391	Industrial Project	4
MDP 411	Advanced Manufacturing Processes	3
MDP 432	Material and Process Selection	3
MDP 491	Graduation Project (1)	4
MDP 492	Graduation Project (2)	4
	Total Credit Hours	**101**

Technical Electives for Materials Engineering

The student should select (5) Elective courses with a total of (15) Credit Hours from the following list:

Course Code	Course Title	Credit Hours
MDP 412	Polymer Processing	3
MDP 413	Forming Technology	3
MDP 414	Machining Technology	3
MDP 415	Casting and Industrial Furnaces	3
MDP 416	Introduction to Nano Technology	3
MDP 420	Quality Systems	3
MDP 430	Selected Topics in Materials Science and Engineering	3
MDP 433	Glass Materials and Technology	3
MDP 434	Binding Materials and Technology	3
MDP 435	Ceramic Materials and Technology	3
MDP 436	Polymer Testing	3
MDP 437	Materials Characterization	3
MDP 438	Non-Ferrous Engineering Metals	3
MDP 439	Extractive Metallurgy	3
CES 444	Building Materials	3
MDP 464	Mechanical Engineering Design	3

Course Tree of Materials Engineering Program