



University of Basrah
College of Engineering
Department of Materials Engineering



7. MAE Program: Curriculum

Typical degree program is shown in the following Tables for Materials Engineering, where recommended MAE course plan by semester is presented

First Year

<i>First Semester</i>					<i>Second Semester</i>				
<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>			<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>		
		<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>			<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>
Mathematics I (E111)	3	3	-	1	Mathematics II (E121)	3	3	-	1
Engineering Mechanics / Static (MAE112)	3	3	-	1	Engineering Mechanics / Dynamic (MAE122)	3	3	-	1
Materials Extraction Technology (MAE113)	2	2	-	1	Materials Extraction Methods (MAE123)	2	2	-	1
Engineering Drawing I (E114)	2	1	2	-	Engineering Drawing II (E124)	2	1	2	-
Principles of Electrical Engineering (MAE115)	3	2	2	-	Electrical Engineering (MAE125)	3	2	2	-
Principles of Computer Science (U116)	3	2	2	-	Computer Science (U126)	3	2	2	-
Principles of Engineering Materials (MAE117)	2	2	-	-	Applied Sciences (E127)	2	2	-	-
Engineering Workshops (I) (MAE118)	1	-	2	-	Engineering Workshops (II) (MAE128)	1	-	2	-
English (U119)	1	1	-	1	English / Technical (U129)	1	1	-	1
Total	20	16	8	4	Total	20	16	8	4
		28					28		

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Second Year

<i>First Semester</i>					<i>Second Semester</i>				
<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>			<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>		
		<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>			<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>
Applied Mathematics I (E211)	2	2	-	2	Applied Mathematics II (E221)	2	2	-	2
Metallurgical Thermodynamics (MAE212)	2	2	-	-	Chemical Metallurgy (MAE222)	2	2	-	-
Physical Metallurgy (MAE213)	2	2	-	-	Engineering Metallurgy (MAE223)	2	2	-	-
Mechanics of Materials (MAE214)	3	3	-	1	Strength of Materials (MAE224)	3	3	-	1
Thermodynamics (MAE215)	2	2	-	-	Fluid Mechanics (MAE225)	2	2	-	-
Introduction to Computer Programming (MAE216)	3	2	2	-	Computer Programming (MAE226)	3	2	2	-
Mechanical Drawing (I) (MAE217)	2	1	2	-	Mechanical Drawing II (MAE227)	2	1	2	-
Human Rights and Democracy Concepts (U218)	2	2	-	-	Laboratory (II) [Chemical Metallurgy+ Engineering Metallurgy + Strength of Mat. + Fluid Mechanics] (MAE228)	2	-	3	-
Laboratory (I) [Metallurgical thermo. + Physical Metallurgy + Mechanics of Mat. + Thermodynamics] (MAE219)	2	-	3	-					
Total	20	16	7	3	Total	18	14	7	3
		26					24		

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Third Year

<i>First Semester</i>					<i>Second Semester</i>				
<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>			<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>		
		<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>			<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>
Engineering Analysis (E311)	3	2	2	2	Numerical Analysis (E321)	3	2	2	1
Behavior of Engineering Materials (MAE312)	3	3	-	-	Failure of Engineering Materials (MAE322)	3	3	-	-
Heat Treatments of Ferrous metals (MAE313)	2	2	-	1	Heat Treatments of non-ferrous metals (MAE323)	2	2	-	1
Engineering Materials Technology (MAE314)	2	2	-	1	Welding and Cutting (MAE324)	2	2	-	1
Ceramic Materials (MAE315)	2	2	-	-	Polymers Engineering (MAE325)	2	2	-	-
Corrosion (I) (MAE316)	2	2	-	1	Corrosion (II) (MAE326)	2	2	-	1
Conduction Heat Transfer (MAE317)	2	2	-	1	Convection Heat Transfer (MAE327)	2	2	-	1
Laboratories (I) [Heat treatments + Eng. Mat. Technology + ceramic + corrosion + heat transfer] (MAE318)	2	-	3	-	Laboratories (II) [Heat treatments + Welding & Cutting + Polymers + corrosion + heat transfer] (MAE328)	2	-	3	-
Total	18	15	5	6	Total	18	15	5	5
		26					25		

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Forth Year

<i>First Semester</i>					<i>Second Semester</i>				
<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>			<i>Subject</i>	<i>Units</i>	<i>Weekly hours</i>		
		<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>			<i>Th.</i>	<i>Prac.</i>	<i>Tut.</i>
Mechanical Design (MAE411)	3	2	2	-	Selection of Engineering Materials for Design (MAE421)	2	2	-	1
Non-Destructive Testing (MAE412)	2	2	-	1	X-Ray Diffraction and Microscopy (MAE422)	2	2	-	1
Composite Materials (MAE413)	2	2	-	1	Advance Materials (MAE423)	2	2	-	1
Powder Metallurgy (MAE414)	2	2	-	1	Stress Analysis and Plasticity (MAE424)	2	2	-	1
CAD & CAM (MAE415)	2	2	-	-	Nano Materials (MAE425)	2	2	-	-
Industrial Engineering (MAE416)	2	2	-	1	Project Management (MAE426)	3	2	2	2
Engineering Project (E407)	2	1	2	-	Engineering Project (E407)	2	1	2	-
Laboratories (I) [Non-destructive Tests + Powder Metallurgy + CAD& CAM] (MAE418)	2	-	3	-	Laboratories (II) [Eng. Mat. Selection + X-Ray Diffraction + Nano Mat.] (MAE428)	2	-	3	-
Total	17	13	7	4	Total	17	13	7	6
		24					26		

Summer Training

The **Materials Engineering** curriculum requires students to complete one month of summer training at private industries or governmental firms. This training is a compulsory component of graduation requirements. It is supervised by the Summer Training Committee of the department.

8. MAE Curriculum / Units Requirements

- 4 - Years Program (Full - Time Study)
- **148 Units for the Materials Engineering included:**
 - **Mathematics and basic Science: 22 Units**
 - **Engineering Topics: 120 Units.**
 - **General Education: 6 Units.**