



MUTAH UNIVERSITY  
Faculty of Engineering  
Department of Chemical Engineering



## Polymers Engineering

### COURSE SYLLABUS

Course Code	Course Name	Credits	Contact Hours
0404578	Polymers Engineering	3	48

#### INSTRUCTOR/COORDINATOR

Name	Dr. Salah ALJBOUR
Email	saljbour@mutah.edu.jo
Website	

#### TEXTBOOK

##### TextBook:

- Robert O. Ebewele. Polymer Science and Technology. CRC Press, New York, 2000

##### References:

- Anil Kumar and Rakesh K. Fundamentals of Polymers Engineering, 2nd edit. McGraw-Hill, 2003.

#### SPECIFIC COURSE INFORMATION

##### A. Brief Description of the Content of the Course (Catalog Description)

Raw materials. Types of polymers. Role of polymer and plastics industries. Polymer reaction engineering. Polymer properties. Analysis of polymer processing in terms of elementary steps and shaping methods. Transport phenomena. Polymer melts rheology. Extrusion. Injection molding..

##### B. Pre-requisites (P) or Co-requisites (C)

(P): 0404437 Mass Transfer

##### C. Course Type (Required or Elective)

Selected Elective

## SPECIFIC GOALS

### A. Specific Outcomes of Instruction

#### Demonstrate ability to

- Define the basic vocabulary of polymer science (SLO-1).
- Recognize the different structure of polymeric materials (SLO-1).
- Distinguish between thermoplastics, elastomers and thermosets Polymers (SLO-1).
- Explain the difference between homo and copolymers from engineering point of view (SLO-1).
- Demonstrate ability to conduct chemical, thermal and mechanical testing and characterization of polymeric sample, and the affecting parameters (SLO-1).
- Demonstrate ability to understand the method of free radical polymerization, polymerization processes (SLO-1).
- Enhance students' skills through intensive use of available data resources and short projects with written and oral presentations (SLO-3, SLO-5).

### B. Student Learning Outcomes (SLOs) Addressed by the Course

1	2	3	4	5	6	7				
✓		✓		✓						

## BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
• Introduction to polymer science, technology and Engineering	1	3 hr/week
• Polymer classification • Polymer crystallinity and affecting parameters.	2-4	3 hr/week
• Molecular weight distribution	5-7	3 hr/week
<b>Mid Term Exam</b>	<b>1</b>	
• Thermal Analysis	8-9	3 hr/week
• Mechanical Analysis	9-10	3 hr/week
• Polymer Processing: Extrusion	10-12	3 hr/week
• Polymer Processing: Injection Molding	13-14	3 hr/week
• Case Studies	15	3 hr/week
<b>Final Exam</b>	<b>16</b>	

## METHODS OF ASSESSMENT

No.	Method of assessment	Week and Date	%
1	Midterm Examination	9th week	30

2	Homeworks and Activities	All over the Semester	<b>20</b>
3	Final examination	End of Semester	<b>50</b>
Total			<b>100</b>