

COURSE SYLLABUS

Polymer Engineering

3010031

COURSE DETAILS

Campus: Beer Sheva

Department: Chemical Engineering

Discipline: Process industry

Year of Study: Forth

Semester: A

Credit: 3

ECTS Credit Points: 4.5

Lecturer(s): Dvir Haim

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Academic year: 2019-2020

Type of Course: Elective

Level of Course: Undergraduate

Mode of Delivery: Face to face

Prerequisites: Fundamentals of momentum
transfer 3000271
Polymers and biopolymers
3000971

Co-Requisites:

Language of Instruction: English

Work Placement(s):

Teaching Assistant(s):

AIM

To teach the students the fundamental principles of polymer processing.

LEARNING OUTCOMES

On successful completion of the course, the students will be able to:

1. Define different types of industrial polymer processing.
2. Thoroughly explain the primary methods of polymer processing, such as extrusion and injection molding.
3. Describe the various models for polymer processing.
4. Determine the different causes having the greatest impact on polymer behavior during each method of processing.

COURSE CONTENTS

Week	Subject	Relevant Reading
1	Basics of polymer processing	[1] – chap 1
2	Basics of polymer processing	[1] – chap 1
3	Overview of polymer processing	[1] – chap 1
4	Review of transport phenomena (mass, momentum, & energy)	[1] – chap 2
5	Rheological properties of polymers	[1] – chap 3
6	Transport of solids (polymer particulates)	[1] – chap 4
7	Process of melting polymers	[1] – chap 5
8	Process of melting polymers	[1] – chap 5
9	Pressurizing process & polymer flow in processing machinery	[1] – chap 6
10	Process of mixing in processing machinery	[1] – chap 7
11	Single-screw and twin-screw extruders	[1] – chap 9, 10
12	Injection molding machine	[1] – chap 13
13	Additional processing techniques, e.g. film blowing & sheets	[1] – chap 14

RECOMMENDED OR REQUIRED READING

Text book:

1. Tadmor Z., Gogos C.G., "Principles of Polymer Processing" 2nd Edition, John Wiley & Sons, 2006.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Lecture hours: 3. Lectures are delivered face to face.

ASSESSMENT METHODS AND CRITERIA

Criterion	Percentage	Comments
Presentation:	30%	Passing grade - 56. If Presentation score is under 56, the final Presentation score becomes the final course grade. Each student has to do a short classroom presentation, focusing on a subject related to polymers.
Project:	60%	
Attendance:	10%	Mandatory attendance at least 80% of lectures.