POLYMERIC MATERIALS

ME 4610

Winter 2018

Textbook:
A. Brent Armstrong, "Plastics Materials & Processing", Pearson Prentice Hall, Third Edition 2006, ISBN 0-13-114558-4

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Office Hours: M,W 4-5pm

Grade Distribution
Assignments/Labs – 40%
Quizzes and Exams- 40%
Participation – 20%

Course website: The course webpage will be hosted on Moodle (moodle.oakland.edu). It will contain announcements, lectures, homework, and links to external content relevant to the course.

Course Objectives

By the end of the course, successful students will be able to:

- Define common scientific and technical terms used in the plastics industry. (a, e, k)
- Explain polymer formation and manufacturing processes. (a, e, k)
- Explain the relationships between the structure and properties of polymeric materials, e.g. molecular structure, solid structure, mechanical properties, thermal properties, rheological properties, optical properties, and physical states and transitions. (a, e)
- Explain polymer degradation and stabilization and polymer recycling. (a, e, h, j)
- Critique one or more papers related to polymer properties and engineering. (g, h)

Laboratory:
Students are requested to form groups of 4. The necessary instructions and handouts for the lab will be provided prior to the lab session. All lab work has to be documented as a lab report and submitted in two weeks after completion of the lab work. The planned lab exercises for this course are:

1. Mechanical behaviors of plastics
2. Impact Properties
3. Thermal properties (HDT)
4. Moldflow Simulation

Academic Conduct Policy: Cheating on examinations, plagiarism, falsifying reports/records, and unauthorized collaboration, access, or modifying of computer programs are considered serious breaches of academic conduct. The Oakland University Academic Conduct Policy will be followed with no exceptions. It is explained on page 93 of Oakland University 2007-'08 Undergraduate catalog and page 24 of Oakland University 2005-07 Graduate catalog. It may also be found on the OU website at www.oakland.edu/oakland/ouportal/index.asp.

Add/Drops: The University add/drop policy will be explicitly followed. It is the student's responsibility to be aware of the University deadline dates for dropping the course.

Special Considerations: Students with disabilities who may require special considerations should make arrangements with campus Disability Support Services. Students should also bring their needs to the attention of the instructor as soon as possible.

Other Policies for this Course:

- It is the responsibility of the student to routinely check the course webpage (moodle.oakland.edu) for announcements, assignment, reading assignments, quizzes, etc.
- Email broadcasts will be sent through the Moodle system. Each student should ensure that these messages are sent to their current email address.
- Permission for exceptions from the normal class-work schedule must be requested ***in advance.*** If work is accepted for a certain assignment after its due date, a significant grade penalty will apply to it.
- Class grades may be curved. I reserve the right to adjust the grades of the whole class upwards or downwards by up to 20% based on class attendance, participation, and performance.

ABET/Program Outcomes: The Program Outcomes are a set of skills that assure the achievement of the program educational objectives. Before graduating, SECS students will demonstrate their skills in the following key areas:

a. an ability to apply knowledge of mathematics, science, and engineering
b. an ability to design and conduct experiments, as well as to analyze and interpret data
c. an ability to design a system, component, or process to meet desired needs within realistic constraints such
as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. an ability to function on multi-disciplinary teams
e. an ability to identify, formulate, and solve engineering problems
f. an understanding of professional and ethical responsibility
g. an ability to communicate effectively
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. a recognition of the need for, and an ability to engage in life-long learning
j. a knowledge of contemporary issues
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.