IT 409: PACKAGING MACHINERY AND PROCESSES- WINTER 2014

Industrial Technology Area
California Polytechnic State University
San Luis Obispo

Instructors	Office	Office Hours	Office Phone	Email
Dr. Koushik Saha	03-433	F : 10:00 am-12:00pm or By Appointment	(805) 756-1677	ksaha@calpoly.edu

Class Time & Place: Lecture: TR: 9:40 am - 11:00 am, 03-306
Activities: M 2:10 pm - 4:00 pm, 21-12
F 12:10 pm - 2:00 pm, 21-12

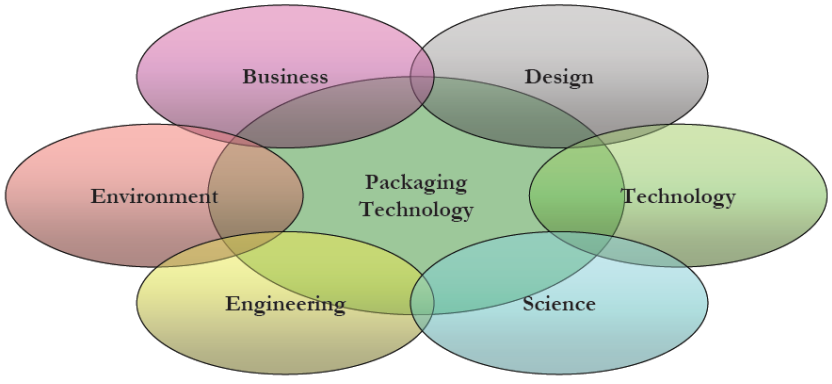
Reading Sources: *Required Text*: None
Recommended Text: Introduction Packaging Machinery – Glenn Davis, PMMI

Assigned readings may be expected from other sources
Instructor's notes/PowerPoint slides: Handed out in class/posted on Poly Learn.
Your class notes

"*Packaging is the science, art and technology of protecting products from the overt and inherent adverse effects of the environment. Packaging is the integration of elements of materials, machinery and people to erect and maintain barriers between the product and those external forces inexorably seeking to revert the contents back to their essential components. The package is the physical entity that functions as the wall between the contents and the exterior.*"

The Wiley Encyclopedia of Packaging Technology, Second Edition

Packaging is an interdisciplinary science and involves business, design, technology, science, engineering, and the environmental areas. The packaging industry divides into various material streams – with each sector utilizing different methods and technologies. These material streams include aluminum, metal, glass, paper & paperboard, plastics and timber. Packaging is the world's third largest industry with expenditures in the U.S. exceeding $140 billion and $430 billion worldwide.



The Discipline of Packaging Technology

Catalog Description

Integrated study of packaging machinery and processes from a practical and operational viewpoint. Understand basic processes and inter-relationship between packaging machinery and type of product, production layout and efficiency, material handling and distribution equipment, quality control and ancillary systems. 3 lectures, 1 activity. Prerequisite: IT 330 or consent of instructor.

Learning Objectives for the Course

The objective of this course is to provide an understanding of packaging line operations, packaging machinery, and process analysis. This course is directed toward students who would pursue a packaging as a discipline as well as those with a background in plant engineering, quality control, production or marketing pursuits during employment.

Student Performance Evaluation

Student performance evaluation will be based on exams, lab reports, and a class project. The following describes each of these:

1. **Lab Activities:** require the students to work in teams to evaluate packaging process, functions & analysis, field trips.
2. **Class Project**: Student teams (same as those formed for the labs) will participate in a class project where students will be required to design a packaging line for a product.
3. **Exams:** There will be three exams. Exams will cover the material presented in lectures, handouts or reading materials provided during class, and lab assignments.

4. **Grading:** Final grades will be based on the following:

Class Project	***25%***
Activities	15%
Midterm I	20%
Midterm II	20%
Final Exam	20%
Total	***100%***

5. **Final Grade:**

The final grade will be composed of a weighted average (based on the weights indicated above) of exams, homework/lab reports and class project. The following is a typical description of letter grade awards:

100-93 A	**89-87 B+**	**79-77 C+**	**69-67 D+**	**59 - F**
92-90 A-	**86-83 B**	**76-73 C**	**66-63 D**	
	82-80 B-	**72-70 C-**	**62-60 D-**	

Course Policies

- Lectures will be posted as PowerPoint presentations on Poly Learn by 8 pm the day before the class.
- I recommend that you download the lectures and briefly read through them before bringing them to the class.
- Do not miss any lecture. If unavoidable for any reason, I need to know in advance
- There will be no make up exams (except for dire circumstances)
- If you have any dispute over your grade, it needs to be resolved within 7 days of receiving them.
- Any assignment/homework must be turned in by the due date to avoid any penalties. A late assignment/home work may be turned in within 24 hours after due date for a maximum 75% credit.
- The lecture outline is tentative and may be changed for special circumstances like a guest lecture, case study, video presentation, etc.
- I am a very easy going person, please feel free to approach me for any problems or enquiries on any topic (even if outside of coursework)
- If you have a question that I can't answer right away, please have patience and I will do my best to have an answer for you at a later date/time

What students can expect from me:

- I will explain the course objectives and structure carefully
- I will do my best to explain the course material clearly and precisely
- I will be available for discussions with students individually or as a group during office hours, by phone or by email
- I will encourage participation and try to make the class dynamic
- I will construct fair but challenging exams
- I will grade the exams and assignments fairly
- I will encourage questions from every student without the fear of embarrassment
- I will provide opportunities for the students to help improve the class and lab activities through suggestions during or outside of the classroom

Students with Special Needs

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both me and the Disability Resource Center (DRC), Building 124, Room 119, (805)756-1395 or email drc@calpoly.edu as early as possible in the quarter.

Honesty Statement

Declaration: By registering and taking this course, the student officially enrolled hereby declares that this same student will be the author of all work submitted for the course. Allowing another individual to complete assignments constitutes fraud and academic dishonesty. Finding material from internet or other sources and presenting it as original is also dishonest. All forms of academic dishonesty, including cheating, plagiarism, and falsification of academic records are subject to disciplinary action. Should such behavior come to the attention of the instructor, the student will be dropped from the course or receive a grade of "F."

Code of Conduct

Improper academic conduct shall be interpreted to mean the obtaining and using of information during an examination by means other than those permitted by the instructor, including supplying such information to other students. All forms of academic dishonesty, including cheating, plagiarism, and falsification of academic records are subject to disciplinary action.

Student Privacy (FERPA)

If you have chosen to protect your Directory Information (which includes name and email), it is important you communicate this to your instructor prior to or on the first day of class. This course uses Poly Learn tools that will display students' full names and email addresses.

Lecture Format

An active learning format will be followed in this course. Instead of spending the entire class time on traditional lecturing, case studies and group discussions will also be included. The students will discuss problems on the topic(s) covered in the previous lecture during the next class period.

Lecture Outline

Week	Date	Topic
1	7-Jan	Course Introduction
	9-Jan	Overview of Packaging Operation Process/ **Class Project Discussion**
2	14-Jan	Packaging Inventory Control and Management
	16-Jan	Packaging Machinery Power
3	23-Jan	Packaging Machinery-Cleaning Equipment
4	28-Jan	Packaging Line and Liquid Filling Operation
	30-Jan	**MIDTERM I**
5	4-Feb	Liquid Filling Operation
	6-Feb	Liquid Filling Operation and Closure, Capping Machinery
6	11-Feb	Dry Filling Operation
	13-Feb	Dry Filling Operation and Labeling
7	18-Feb	Field Trip- Spice Hunter Inc.
	20-Feb	**MIDTERM II**
8	25-Feb	Scales & Check Weighing and Metal Detection
	27-Feb	Guest Lecture- Scholle Packaging
9	4-Mar	End of Line Operations
	6-Mar	Packaging Line Efficiency
10	11-Mar	PROJECT PRESENTATIONS, FINAL PROJECT REPORT DUE
	13-Mar	PROJECT PRESENTATIONS, FINAL PROJECT REPORT DUE
Thursday, March 20th Final: 10:10am-1:00pm; Rm. 3-306		