

IT 330: FUNDAMENTALS OF PACKAGING – WINTER 2014

Industrial Technology Area
California Polytechnic State University
San Luis Obispo

Instructor	Office	Office Hours	Office Phone	Email
Dr. Jay Singh	03-451	TR: 1:30 – 2:30 pm or by appointment	(805) 756-2129	jasingh@calpoly.edu

Class Time & Place: **SECTION 01:** Lecture: TR: 9:40 am - 11:00 am, 03-205

SECTION 05: Lecture: TR: 7:40 am - 9:00 am, 03-204

ACTIVITIES:

Section	Day	Time	Location
2	F	9:10 am - 12:00 pm	21-11
3	F	12:10 - 3:00 pm	21-11
6	T	12:10 - 3:00 pm	21-11
7	R	12:10 - 3:00 pm	21-11

Reading Sources:

Required Text: None

Recommended Text: Fundamentals of Packaging Technology – Walter Soroka, IOPP,
ISBN 0946467005

Assigned readings may be expected from other sources

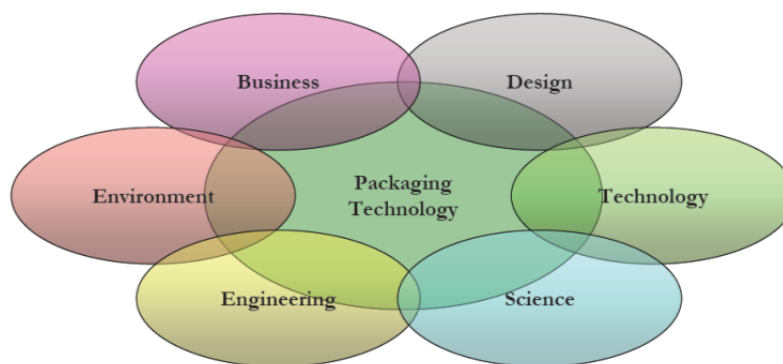
Instructor's notes/PowerPoint slides: Handed out in class/posted on PolyLearn.

Your class notes

Packaging is the science, art, and technology of enclosing and protecting products for distribution, storage, sale, and use. It also refers to the process of design, evaluation, and production of packages. Packaging can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells.

Soroka, W. (2002) *Fundamentals of Packaging Technology* Institute of Packaging Professionals

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

Overview of packaging. Historical development, functions, and materials. Processes and technology employed to protect goods through the supply chain. Container types, package design, development, research and testing. Economic and international importance and perspective as an industrial activity. Packaging and the environment, and laws affecting packaging. 3 lectures, 1 laboratory.

Prerequisite: Junior standing; completion of GE Area B3 via a course in physics (PHYS), Honors Contract physics (HNRS), or physical science (PSC).

Fulfills GE Area F.

LEARNING OBJECTIVES FOR THE COURSE

- LO1: Students will be able to explain and outline the considerations for the various functions of packaging and their relationship to the needs and wants of society.
- LO2: Students will demonstrate familiarity with the concepts of materials, processes and technology employed to protect goods during manufacture, handling, shipment, and storage. Additionally this course provides a foundation for more advanced packaging courses.

LEARNING OBJECTIVES MAPPED TO DEGREE PROGRAM LEARNING GOALS

- | | |
|-------------|--|
| LO1 maps to | Demonstrate fundamental knowledge and skills to solve management, technology and applied engineering problems. (LO 1.1 BS-Indtec & LO 1.1 BSBA)
Illustrate an understanding of sustainability practices in industry (LO 2.2 BS-Indtec) |
| LO2 maps to | Demonstrate fundamental knowledge and skills to solve management, technology and applied engineering problems. (LO 1.1 BS-Indtec & LO 1.1 BSBA)
Demonstrate effective participation and leadership in teams. (LO 3.1 BS-Indtec & LO 4.3 BSBA)
Demonstrate effective speaking skills. (LO 3.2 BS-Indtec & LO 4.2 BSBA)
Demonstrate effective writing. (LO 3.3 BS-Indtec & LO 4.1 BSBA) |

STUDENT PERFORMANCE EVALUATION

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

1. **Lab Activities:** These require the students to work in teams to evaluate and make presentations on package functions, construction of various package forms, and material/package testing techniques.
2. **Class Project:** Student teams (same as those formed for the labs) will participate in a class project aimed at creating conceptual packaging ideas keeping innovation in mind. Details are available at the end of this syllabus.
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	25%
Midterm I	15%
Midterm II	15%
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 makeup 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

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	Introduction to the Course
	9-Jan	Perspectives on Packaging
2	14-Jan	Packaging Functions, Branding & Components
	16-Jan	Package Printing & Decorating
3	21-Jan	Monday Schedule due to MLK Jr. Birthday on January 20. NO CLASS
	23-Jan	Paper & Paperboard PRELIMINARY PROJECT REPORT DUE
4	28-Jan	MIDTERM I
	30-Jan	Corrugated Fiberboard
5	4-Feb	Metal Cans & Aerosol Containers
	6-Feb	Polymer Chemistry
6	11-Feb	Polymer Chemistry/ Plastics Processing
	13-Feb	Plastics Processing
7	18-Feb	MIDTERM II
	20-Feb	CLASS PROJECT DISCUSSION FIRST DRAFT OF FINAL REPORT DUE
8	25-Feb	Glass Packaging (Guest Lecture)
	27-Feb	Glass Packaging (Guest Lecture)
9	4-Mar	Distribution Packaging
	8-Mar	Distribution Packaging
10	11-Mar	PROJECT PRESENTATIONS, FINAL PROJECT REPORTS DUE
	13-Mar	PROJECT PRESENTATIONS, FINAL PROJECT REPORTS DUE
FINAL EXAMS:		
Section 1: March 20th, 10:10 am – 11:30 am		
Section 5: March 20th, 8:10 am – 9:30 am		

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 PolyLearn tools that will display students' full names and email addresses.

CLASS PROJECT (25% OF OVERALL GRADE)

How often do you see a new package while shopping that makes you think the following?

- Why didn't I think of it first?
- I did think about it first?
- That makes a lot of sense?
- I like this product but I wish they would change/add this feature.
- etc.

This class project gives you an opportunity to create a new package or modify an already existing package for any kind of product. You may even think up of a new product and then design a package for it. The modifications you could think about making could be as simple as adding an extra feature (a spout, a handle, a wider mouth, etc.), modify the shape, modify/change the graphics, select a different packaging material, etc. Some inspiration can be drawn from the examples in the lectures. The following websites can be viewed for inspiration. You may also Google "Packaging Innovations" to explore a myriad of examples.

1. http://www.omnicontests4.com/gallery-searchresult.aspx?gallery_id=1
2. <http://www.iopp.org/i4a/pages/index.cfm?pageID=2235>
3. <http://www.webpackaging.com/editions/global-packaging/packaging-innovations/>
<http://www.squeezeopen.com/>
4. <http://machinedesign.com/article/award-winning-packaging-innovations-target-consumer-products-1007>
5. <http://packaginguniversity.com/blog/category/im-happy-to-announce/>

Following are the guidelines for the project:

- Think *outside the box*. Your idea needs to be original.
- This group project is to be done with your lab partners.
- The projects will be graded by effort, validity/practicality of the idea, quality of the report & the presentation and, mainly by comparing all groups.
- Your group may contact me after any class period or during office hours or make appointments with me for any discussion or input.
- If possible, create a physical sample. If not possible, include a diagram/sketch/drawing/3D-modeling for the same.
- There will be three group reports due:
 1. **Preliminary report: January 23rd** (should include 3 of your top ideas), brief 1-page typed report. Will include a brief explanation of each idea along with a sketch or illustration.
 2. **First draft of Final Report: February 20th** (addressing as much and as many of the **8** topics as shown below in the evaluation criteria)
 3. **Group presentation and final report: 11th & 13th March at the time of presentation**, each group will have 5 minutes for power point presentation.
The final report should be double spaced 4-5 pages (excluding cover page) concentrating on your final selection. The written report should discuss the **8** topics shown below. Cover page should include names of all group members and lab section.
- **Presentation Outline:** The presentation content should include the summary findings of the **8** criteria shown below for the written report. The quality of your group presentation will be evaluated as per the presentation criteria shown below.
- This project will account for **25%** of your overall grade in this course.

EVALUATION CRITERIA FOR CLASS PROJECT REPORT AND PRESENTATION

CRITERIA
WRITTEN REPORT
1. Did the group clearly identify the packaging concept? [2 points]
2. Did the group clearly identify the product for which the package was created? [2 points]
3. Did the group clearly identify the problem the conceptual package solves (innovation)? [2 points]
4. Did the group clearly identify the rationale for selecting the package (economics)? [2 points]
5. Did the group clearly identify the market segment for which the package is targeted? [2 points]
6. Did the group clearly identify the packaging materials used (package performance)? [2 points]
7. Did the group clearly identify the manufacturing processes to be used for converting the packaging materials? [1 point]
8. Did the group clearly identify the environmental issues related to the packaging materials used? [2 points]
TOTAL POSSIBLE POINTS = 15
PRESENTATION
1. Did the group's presentation capture and sustain the interest of the class? [2 points]
2. Did the group's presentation highlight learning insights that the team gained, particularly those that are useful to the class? [4 points]
3. Was the group's presentation well organized and clear? [4 points]
TOTAL POSSIBLE POINTS = 10
GRAND TOTAL = 25 POINTS