Syllabus: PKG 4101C – Computer Tools for Packaging

Credits: 3

Meeting Times: T TH 12:50 AM – 2:45 PM

Office Hours: Wed 12:35-1:35PM (or as necessary)

Instructor: Bruce A. Welt Ph.D.
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General Description: Computer Tools for Packaging covers major software tools used by professionals in the packaging industry. Students will design and develop a relational database. Commercial label design software, Label Matrix® (Teklynx), will be used to create product labels in accordance with regulations including bar codes and/or EPC codes (RFID). Microsoft® Excel and Visual Basic for Applications (VBA) will be used as an introduction to extending capabilities of software with programming. 3D design software including Cape Pack®, SolidWorks® and ArtiosCAD® will be used to develop packaging concepts and assess distribution efficiencies of various designs. Team projects will allow students to solve comprehensive packaging problems.

Objectives: After successful completion of this course the student will be able to:

1. Use the Internet to research and identify packaging companies, packaging materials, and relevant regulations.
2. Design, create and productively use relational databases.
3. Create product label templates with Label Matrix in accordance with labeling regulations.
4. Use MS-Excel and programming with VBA to solve packaging related problems. Use MS VBA to code programs that use spreadsheet data as inputs, execute subroutines and functions, and display output on a spreadsheet.
5. Use SolidWorks to create 3D models for package designs.
6. Use Tops/CapePack Software to analyze primary package design in conjunction with shipper boxes, pallets and trucks to analyze distribution efficiency.
7. Design packaging concepts using ArtiosCAD software.
8. Use MS-Powerpoint software to create presentations of solutions.
9. US MS-Word to write concise technical reports to convey project information.

Text: Software User Manuals and Online Help Files.

Grading:

3 Individual Projects	100 Points Each
Team Project (3-in-1)	300 Points
Attendance	Mandatory

All projects and assignments will be graded on a scale from 0 to 100. Work on all projects will have posted due dates. Posted due dates are subject to change. I reserve the right to not accept, accept or accept with penalty, late submissions or your work product. Class attendance is mandatory and weighs heavily on how any late work is treated.

Team project scores will be computed based on contributions of team members. Team members may receive different scores. Be sure to not only contribute, but that team members and I can recognize your contributions.

Final grades will be computed from the percentage of points earned relative to the total points possible. Grades will be assigned as follows:

$A \geq 90\%$
$87 \leq B+ < 90$
$83 \leq B < 87$
$80 \leq B- < 83$
$77 \leq C+ < 80$
$73 \leq C < 77$
$70 \leq C- < 73$
$67 \leq D+ < 70$
$63 \leq D < 67$
$60 \leq D- < 63$
$E < 60$

Attendance: ABSOLUTELY REQUIRED to succeed in this course! If you come and work, it will be hard for you to not succeed. A sign-in sheet will be used in each class.

Recommended Reading:

Tran. SolidWorks 2016 Basic Skills. SDC (Provided via loan)

Software Help files, tutorials and any related online information that is helpful.

Soroka, W. *Fundamentals of Packaging Technology*, Institute of Packaging Professionals, Herndon, VA, 1999.

Course Outline:

I. Product Labeling
   a. Consumer Information – Use the Internet to research FDA regulations related to food product label requirements.
   b. Add product label information storage capability to sample company database (Northwind Traders).
   c. Label Design – Use LabelMatrix® software to develop food labels in accordance with FDA regulations.
   d. Product tracking technologies - Bar code, machine vision and RFID technologies will be covered and incorporated into solutions.

II. Microsoft Excel – MS Excel is a virtually ubiquitous versatile computer tool applicable to many problems in business and industry. Students will use spreadsheets, and write programs using the powerful MS-VBA programming language.
   a. Spreadsheets for performing packaging related calculations.
   b. Programming in MS Excel Visual Basic for Applications (VBA) to solve problems.

III. Design of Experiments & Statistical Analysis (time permitting)

IV. Package Design & Logistics – Students will use Cape Pack or Tops software to design 3D packaging shapes, and to study the effect of package design on distribution efficiency. Students will study how changes in primary package size can affect shipper (case) size, pallet and transport loading arrangements. Students will learn to incorporate distribution efficiency into product package design.

V. Conceptual Package Design for Presentation – The ability to communicate ideas is critical to success in any profession. Often, presentations to management must be made in order to gain support for new product development projects. Powerful 3D rendering software packages such as 3D Studio Viz, SolidWorks, ArtiosCAD and Pro Engineer are being increasingly used to convey new product ideas. Students will use ArtiosCAD and/or SolidWorks to design and render picture-quality packaging concepts for use in new product development presentations.

VI. Team semester presentation – Teams will work together on a comprehensive packaging design project. Powerpoint will be used to design and print a 4’ x 3’ poster summarizing results.

Academic Honesty: As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty, and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the university."
Software Use: All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Such violations are also against University policies and rules, and disciplinary action will be taken as appropriate.
University of Florida Counseling Services: Resources are available on campus for students having problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling.
2. Student Mental Health, Student Health Care Center, 392-1171, for personal counseling.
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, for sexual assault counseling.
4. Career Resource Center, Reitz Union, 392-1601, career development