

Computer Tools for Packaging

PKG4101C

Class Periods: T,Th 12:50 – 2:45 (periods 6 -7)

Location: Rogers 283 & Zoom as required

Academic Term: Spring 2025

Instructor:

Bruce Welt, Professor

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352-294-6730

Office Hours: W, F (1-3PM)

Course Description

(3 Credits) 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. Students will use statistical software to analyze package permeation data. 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.

Course Pre-Requisites / Co-Requisites

Course Objectives

1. Design, create and productively use relational databases.
2. Create product label templates with Label Matrix in accordance with labeling regulations.
3. 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.
4. Analyze experimental package gas permeation data using statistical software.
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.

Materials and Supply Fees

None

Professional Component (ABET):

This course contributes 3 credit hours of approved technical elective credit.

Relation to Program Outcomes (ABET):

The table below is an example. Please consult with your department's ABET coordinator when filling this out.

Outcome	Coverage*
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	Medium
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.	High

3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	
4. An ability to communicate effectively with a range of audiences	Low
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	
6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.	
7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty	

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

None

Recommended Materials

Course lecture notes, software help files.

Course Schedule

Week 1: Relational Databases
 Week 2: Relational Databases
 Week 3: Database driven label design
 Week 4: Database driven label design
 Week 5: VBA Excel
 Week 6: VBA Excel
 Week 7: Statistical Analysis - r
 Week 8: Distribution Optimization (Cape/Tops)
 Week 9: Distribution Optimization (Cape/Tops)
 Week 10: Distribution Optimization (Cape/Tops)
 Week 11: Corrugate/Paperboard package design (ArtiosCAD)
 Week 12: Corrugate/Paperboard package design (ArtiosCAD)
 Week 13: Primary Package Design (SolidWorks)
 Week 14: Primary Package Design (SolidWorks)

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is required and monitored by sign-in sheet. Each unexcused absence may be charged a grade point. Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and may require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Projects (6-7)	600-700	100%

Grading Policy – Note that all exam and homework scores are rounded up to nearest whole number.

Percent	Grade	Grade Points
94 - 100	A	4.00
90 - 93	A-	3.67
87 - 89	B+	3.33
84 - 86	B	3.00
80 - 83	B-	2.67
77 - 79	C+	2.33
74 - 76	C	2.00
70 - 73	C-	1.67
67 - 69	D+	1.33
64 - 66	D	1.00
60 - 63	D-	0.67
0 - 59	E	0.00

All projects and assignments will be graded on a scale from 0 to 100. All project submissions will be in the form of a written project brief using a pre-defined structure and format. 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:

More information on UF grading policy may be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

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. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. **As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited. This includes all content from the course that can be experienced by any of the human senses. This includes but is not limited to course files, screenshots that you capture, recordings captured by your own devices, etc. Unauthorized sharing of course content will result in removal from the course, disciplinary action, and you will receive a failing grade.**

F2F Course Policy in Response to COVID-19

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#).
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. [Find more information in the university attendance policies](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.