Packaging Production and Processing
PKG4011   Sections 0876
Class Periods: MWF Period 5, 11:45am-12:35pm
Location: Rogers 110 & Zoom as required
Academic Term: Spring 2025

Instructor:
Bruce Welt, Professor
bwelt@ufl.edu
352-294-6730
Office Hours: MWF 1-2PM (or by appointment. Please email course business through Canvas email)

Course Description
(3 Credits) Study specification, design, acquisition, operation, performance assessment and economic justification of modern packaging lines. Processes related to product and package production are studied. Study of ethics related to production, consumption and professionalism including decision-making, labor relations, innovation, sustainability, profits, taxes, etc.

Course Pre-Requisites / Co-Requisites
None

Course Objectives
After successfully completing this course, the student will be able to:
1. Identify and research packaging machines, machine manufacturing companies and packaging industry associations.
2. Identify unit operations that comprise common packaging lines.
3. Specify operating requirements of individual packaging machines to allow groups of packaging machines to function as a coherent system.
4. Apply time-value-of money concepts to assist in making capital investment decisions.
5. Understand relationships between products, packages, machines, and personnel.
6. Critically analyze ethical issues related to packaging and your employment, production, consumption, environment, politics, and society.
7. Assess feedback process control loops and digital programmable logic controllers.
8. Contribute to the productivity of packaging operations involved in various markets including bottling, folding cartons, rigid packaging, flexible packaging, product handling and quality control/assurance.

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.	High
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.	Medium
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	
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.	High
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
Davis, C.G. Introduction to Packaging Machinery. Packaging Machinery Manufacturers Institute, Arlington, VA. 1997 (draft). Provided (Free) as pdf.

Course Schedule
Week 1:	Packaging lines – Line Balancing
Week 2:	Packaging lines – Production benchmarking
Week 3:	Machinery – Liquid filling
Week 4:	Machinery – up-stream, down-stream
(Exam 1)	Date TBD (Approx. Feb 5)
Week 5:	Professional Ethics
Week 6:	Packaging machinery capital investment & accounting
Week 7:	Depreciation
Week 8:	Time value of money
(Exam 2)	Date TBD (approx.. March 13)
Week 9:	Process control (feedback)
Week 10:	Process control (logic)
Week 11:	Quality control/sampling plan
Week 12:	Project planning
Week 13:	Professional ethics
Week 14:	Plastics processing
(Exam 3)	Date TBD (Approx. April 21)
(Final Exam)	Final exam is comprehensive and optional ("if you like your grade before the final, you can keep your grade)

Attendance Policy, Class Expectations, and Make-Up Policy
Attendance is required and monitored. 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
Homework (~10)	1	15%
Exams (3 & Final)	500	85%

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

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.aa.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.aa.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.