FOS 4427 [Principles of Food Processing]

Spring, 2026

Course Format: In-person,4 Credits

Lecture: M W F 9:35-10:25AM Location FLI 0105
Laboratory A: F 12:50-3:50 PM Food Science Pilot Plant/ MCCB3086
Laboratory B: F 3:00-6:00 PM Food Science Pilot Plant/ MCCB3086

Instructor(s)

Instructor: Dr. Andrew MacIntosh

[office location] AFPP (Bldg 120) Room 126

[telephone number] 352 294 3594

[email address] andrewmacintosh@ufl.edu

Office Hours: in-person Monday (14:00 – 15:00) These may be adjusted during the first week of class as to not conflict with the FS student schedule.

Instructor: Dr. Katherine Thompson-Witrick

[office location] AFPL (Bldg 461) Room 214

[telephone number] 352 294 3908

[email address] kthompsonwitrick@ufl.edu

Office Hours: in-person Tuesday (11:00 – 12:30) These may be adjusted during the first week of class as to not conflict with the FS student schedule.

Teaching Assistant

Nick Wnedrick and Julia Tvedt

[office location] AFPP (Bldg 120) Room 126

[telephone number] 352 294 3594

[email address] nwendri1@ufl.edu & julia.tvedt@ufl.edu

Office Hours: in-person Monday (16:00 – 17:00)

Course Description

Principles of processing foods: cooling, freezing, heating, dehydrating, concentrating, irradiating, fermenting and the use of chemicals.

Course Learning Objectives

1. Students will be able to apply the concepts of food engineering to food processing systems to compare methods and evaluate safety.
2. Students will test food processing theories during laboratories.

3. Students will apply food processing theories to scenarios and quantify parameters.
4. Students will analyze food processing problems and determine optimal solutions.

Course Overview and Purpose

This class will introduce non-thermal methods of foods processing, including cooling, freezing, heating, dehydrating, concentrating, irradiating, and fermentation. Laboratories provide students with hands-on experience working with food processing equipment.

Course Prerequisites

FOS 4410C.

Textbooks, Learning Materials, and Supply Fees

Recommended text: Singh, R.P. and D.R. Heldman. 2013. Introduction to Food Engineering. 4th edition. Academic Press.
Note: Supplemental notes and handouts will be distributed to class via Canvas and/or email

Instructor Interaction Plan

Standard interaction is anticipated, professor will attempt to learn student names

Required Technology & How to Obtain the Technology

A portable personal computer with Excel is encouraged, but one will be provided when required (for tutorials and exams).

Technical skills

Excel proficiency is expected

Digital information literacy skills

Must know how to read/input data and work with MS office suite files. Must also be able to look up information on the internet.

Communication Guidelines

Must be able to communicate and work with group members during and after the laboratory to produce technical lab reports.

Class Demeanor/Expectations

Students are expected to engage with professional demeanor

General Education or Quest or Writing Objectives and Student Learning Outcomes

NA

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Weekly Course Schedule

Week	Topic
1	Non-Thermal Intro & Hurdle Water Activity (653-658)
2	Non Linear regression
3	Evaporation (543-545, 548, 551)
4	Distillation
5	Gas exchange
6	Packaging and MAP (754-766)
7	EXAM III review
8	Brewing Fermentation & acids
9	Other Fermentations
10	Spring Break
11	Psychrometrics (571-584)
12	Air Dry & Vapor Cycle (663-670)
13	Refrigeration and Freezing (455-474)
14	Plank and Ice Cream (501-530)
15	EXAM IV review

Grading Policy

Course grading is consistent with UF grading policies.

Course Grading Structure

Assignment Type	Point Value	Percent of Final Grade
Lab reports (nominally 6)	6 ea	(nominally 36%)
Tutorial (nominally 6)	3 ea	(nominally 18%)
Exam I	20 ea	20
EXAM II	20 ea	20
Lab Captain	3 ea	(nominally 6%)

Grading Scale

A: 90 – 100
A-: 87-89.99
B+: 85 – 86.99
B: 80 - 84.99
C+: 75 - 79.99
C: 70 - 74.99
D+: 65 - 69.99
D: 60 - 64.99
E: Below 60

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources

Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

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.

Privacy and Accessibility Policies

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility

Additional information

Lab Reports: Laboratory reports are due one week from the date of the laboratory. A 20% penalty will be assigned for late assignments or reports turned in within 3 days after the due date. No lab report will be accepted after 3 days past the due date. Reports should be started early so that any questions may be asked well in advance of the due date (ideally during office hours). It is the student's responsibility to ask any questions about the report before the last minute.

Lab reports are typically allowed to be completed in groups assigned at the beginning of term. Group work allows student to poll knowledge and skills, and the ability to compromise/communicate is invaluable in industry. However, as the consequences of poor individual involvements are very different in industry, if a student for any reason does not wish to work as part of a group, they may complete the report individually. A group may NOT expel a member, but all members can choose to work individually. This must be clearly communicated to the other group members/TA at least two days before the laboratory due date. Any individual report will count as a "captained" report. All reports are graded equally regardless of how many students worked on it.

Participation: Students will not be assigned a grade based on their attendance, however, preparedness for the laboratory is essential and students who have not reviewed the laboratory manual will not be permitted to participate in the laboratory.

review to assist in exam preparation, and to give students the opportunity to review examples.

Captained labs

During the year each student will be assigned 2 lab reports to Captain. The Captain is expected to coordinate the laboratory and complete the submission. A an average grade for captained labs will be assigned as the Lab Captain mark. If the laboratory captain is absent, another student may volunteer, or there will be no captain assigned for that laboratory.

Makeups

Due to the availability of equipment, time required, and nature of the laboratories/exams, there will be NO Makeups for labs, tutorials or midterms. If you miss a section of this course for an acceptable reason as per university policy (of which a COVID-19 absence IS acceptable) you will be graded as though the lab/test did not exist - raising the value of the other marks in this category (you must communicate the absence and reason to the professor for this to apply). Note, if you miss something due to this policy Canvass will no longer correctly show your mark, however, it will be reflected in your final grade. The only exception to this policy is the final exam which MUST be taken during the assigned examination period, or a grade of incomplete will be submitted.

Attendance

Lectures are expected to be attended in person, and lecture attendance is also mandatory. In the event that a student has been exposed to an individual with COVID-19 or is self-isolating, they may attend over live zoom at the scheduled time. If a student is unwell, the lectures are recorded and are made available via UF OneDrive. My experience with this course has shown that classes with active participation in discussions and questions are far superior to pre-recorded lectures, and that students who attend the scheduled lectures (either in person OR through video conference) perform better on exams and during laboratories. I strongly encourage all students to attend every lecture (either in person OR zoom) and interact during the discussions and examples. This is a difficult course, and we move at a fast pace with each lecture building upon the last. I understand that there are sometimes extenuating circumstances, however if you miss more than 4 lectures (10% of the class) without acceptable reasons (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx), you will be assigned a failing grade for excessive absences. I will make a recording of every lecture available for