

FOS 4318 - FLAVOR CHEMISTRY

Credits: 3

Offered Fall Semester of even years.

Class Meeting Times:

Monday Period 6 (12:50-1:40 PM)

Wednesday Periods 6 & 7 (12:50-2:45 PM)

Instructor:

Paul J. Sarnoski

Food and Environmental Toxicology Lab (Rm 14)

Phone: 352-294-3732

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TA: Megan Kinsman (m.kinsman@ufl.edu)

Office Hours

By Appointment

Course Description

Students taking this class will learn how flavor chemicals impact sensory perception of food. We will also discuss flavor compounds used in foods, their production, isolation, analysis, and specific attributes.

Learning Objectives

LO 1. Differentiate different classes of flavor compounds, their flavors, sources and interactions in foods.

LO 2. Classify different methods of flavor trapping, isolation and application.

LO 3. Communicate different methods of analysis for identification of flavor compounds and compare their applications, advantages and disadvantages.

Course Prerequisites

General Chemistry: CHM 2045, CHM 2046 sequence (with labs): Need to meet a minimum C requirement for the courses specified or equivalent courses.

Organic Chemistry: CHM 2200 or CHM 2210, CHM 2211 sequence (with labs): Need to meet a minimum C requirement for the courses specified or equivalent courses.

FOS 4311 (Food Chemistry) and FOS 4321C (Food Analysis) are strongly recommended but not required

Course Outcomes

Students will be able to identify the role of flavor molecules in food, from both a sensory and food quality perspective. This will involve being able to identify the chemical structures of flavor compounds, and how those chemicals are produced from a synthetic or biological perspective. Themes will include the use of analytical chemistry to identify flavor compounds. Impacts of processing, packaging, and storage on flavor quality and stability will be covered.

Grading Scheme

Exams (2) - 100 pts each

Homework/Reports - 200 pts

Final Exam (cumulative) – 100 pts

Total: 500

Reports are usually due 7 days after conducting the experiment. Two points will be deducted each day for late assignments or reports. Four homeworks and three in-class experiments will be conducted over the course of the semester. The homeworks consist of problem solving related to topics covered in class.

Grading Scale

90-100%	A	70-74.9%	C
88-89.9%	A-	68-69.9%	C-
85-87.9%	B+	65-67.9%	D+
80-84.9%	B	60-64.9%	D
78-79.9%	B-	58-59.9%	D-
75-77.9%	C+	Below 58%	E

The grading scale is consistent with the university policies on grading that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

E-Learning (Canvas)

An E-Learning course site has been developed for this course. Lecture slides, readings, homeworks, report instructions, and due dates are posted there. Make sure to check the course site regularly.

Required Text

Food Flavour Technology, 2nd Edition. 2010. Andrew Taylor & Robert Linforth Eds., Wiley-Blackwell. ISBN 9781405185431 (Ebook is available by link -

<https://ebookcentral.proquest.com/lib/ufl/detail.action?docID=477860>)

Recommended Supplemental Reading

Flavor Chemistry and Technology, 2nd Edition. 2006. Gary Reineccius. CRC Press. ISBN 1566769337

Fennema's Food Chemistry, 2007. 4th Edition, S. Damodaran, K. Parkin, O. Fennema Eds. CRC Press.

Attendance and Make-Up Work

This class will not be a strict lecture format. Everyone is expected to contribute to the discussion of the material, conduct experiments, and attend class. We will be performing in-class experimental work (sensory analysis, flavor replication, etc.) on a semi-weekly basis. Try not to miss the experimental work, since you will need to make-up the activity on YOUR OWN.

Make up Exam Policy/Late Assignments

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Course Schedule

Week	Topic	Readings	Critical Dates
1 (8/21)	Class Introduction. What is Flavor?	Ch. 1 & 2	
2 (8/28)	What is Flavor? Flavor Impact Compounds, and Special Considerations During Flavor Creation (No class 9/5)	Ch. 1 & 2	Vanilla Flavored Soymilk Replication Report Due 9/14
3 (9/4)	Flavor Analysis – Isolation	Ch. 9	
4 (9/11)	Flavor Analysis - Isolation	Ch. 9	HW 1 Due 9/19
5 (9/18)	Flavor Analysis – Identification	Ch. 9	
6 (9/25)	Flavor Analysis - Identification	Ch. 9	HW 2 Due 9/28
7 (10/2)	The Role of Sensory in Flavor Analysis	Ch. 11	HW 3 Due 10/10; Exam 1 (10/12/22 tentative)
8 (10/9)	Flavor Biotechnology (Biocatalysis, Fermentation, Regulatory Aspects)	Ch. 4	Time-Intensity Analysis Report Due 10/17
9 (10/16)	Flavor Biotech (continued)	Ch. 4	
10 (10/23)	Dairy Flavors	Ch. 5	
11 (10/30)	Dairy Flavors/Survey of World Cheeses	Ch. 5	Cheese Descriptive Analysis Report Due 11/9
12 (11/6)	Reaction Flavors	Ch. 3	
13 (11/13)	Plant Flavors (Fruit and Vegetable Flavor) –	Ch. 4 & 5	
14 (11/20)	Plant Flavors (Fruit and Vegetable Flavor) (No class 11/23 – Thanksgiving break)	Ch. 4 & 5	
15 (11/27)	Plant Flavors (continued)	Ch. 4 & 5	HW 4 Due 11/30 Exam 2 (11/30/22)
16 (12/4)	Finish Up, Grad Student Presentations, and Review for Final		Final Exam Due Date 12/13/22

Online Course Evaluation Process

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/>.

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*” You are expected to exhibit behavior consistent with this commitment to the UF

academic community, and on all work submitted for credit 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."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

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.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,
www.counseling.ufl.edu/cwc/

Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching

- U Matter We Care, www.umatter.ufl.edu
- *Career Resource Center*, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. **The Dean of Students**

Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Student Complaints:

- Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf