

Flavor Chemistry and Technology 2016

FOS 4936 (undergrad level)/ 6317C (grad level) - FLAVOR CHEMISTRY AND TECHNOLOGY: Offered Fall Semester of even years.

Class Meeting Times:

Monday Period 9 Rinker 110

Wednesday Periods 9 & 10 Rinker 110

Instructor:

Paul Sarnoski

Food Science and Human Nutrition Building (Rm 349)

Phone: 352-294-3732

EMAIL: psarnoski@ufl.edu

Office Hours

By appointment

Course Prerequisites

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

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

Course Description

This course is designed for individuals who are interested in the relationship of flavor chemicals in foods impact on sensory and psychological aspects. We will also discuss flavor compounds used in foods, their production, isolation, and specific attributes.

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.

Assessment Tools

Exams (2) - 100 pts

Homework/Experiment reports (minimum 2 pgs)/Participation - 200 pts

Final Project - 150 pts – (Grad Students only)

Final Exam – Cumulative Take Home Exam – 100 pts

Total: 650 pts (Graduate); 500 (Undergraduate)

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 |

Required Text

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

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.

In Class Participation

This class will not be a strict lecture format. Everyone is expected to contribute to the discussion of the material. We will be performing in-class experimental work (sensory analysis, flavor replication, etc.) on a semi weekly basis.

Make up Exam Policy

Make up exams are frowned upon and will only be given with advance permission of the instructor. Each examination will include the following statement: "*On my honor, I have neither given nor received unauthorized aid on this examination.*" **Cheating is NOT tolerated and will be reported.**

Tentative Class Outline

| Week | Topic | Reading | Key Tasks |
|------------|--|-----------|---|
| 1 (8/22) | What is Flavor? Flavor Impact Compounds, and Special Considerations During Flavor Creation | Ch. 1 & 2 | |
| 2 (8/29) | What is Flavor (continued) | Ch. 1 & 2 | Vanilla Flavored Soymilk Replication |
| 3 (9/5) | Flavor Analysis – Isolation (No class 9/5) | Ch. 9 | HW 1 |
| 4 (9/12) | Flavor Analysis – Isolation/Identification | Ch. 9 | |
| 5 (9/19) | Flavor Analysis - Identification | Ch. 9 | HW 2 |
| 6 (9/26) | The Role of Sensory in Flavor Analysis | Ch. 11 | Time-Intensity Analysis; HW 3 |
| 7 (10/3) | Sensory (continued) | Ch. 11 | Exam 1 (10/5/16 tentative) |
| 8 (10/10) | Flavor Biotechnology (Biocatalysis, Fermentation, Regulatory Aspects) | Ch. 4 | Fermentation and Flavor Production (in conjunction with FOS 6455C) |
| 9 (10/17) | Flavor Biotech (continued) | Ch. 4 | |
| 10 (10/24) | Dairy Flavors | Ch. 5 | |
| 11 (10/31) | Dairy Flavors/Survey of World Cheeses | Ch. 5 | Cheese Descriptive Analysis |
| 12 (11/7) | Reaction Flavors – Dr. Yu Wang | Ch. 3 | |
| 13 (11/14) | Plant Flavors (Fruit and Vegetable Flavor) | Ch. 4 & 5 | Fermentations Final Results |
| 14 (11/21) | Plant Flavors (Fruit and Vegetable Flavor - No class 11/23) | Ch. 4 & 5 | HW 4 |
| 15 (11/28) | Flavor Release (if time permits)/Final Student Projects | Ch. 8 | Exam 2 (11/30/16) |
| 16 (12/5) | Final Student Projects | | Grad students will present the results of their final research projects |
| Finals | Cumulative Take Home Exam | | |

Final Project

Graduate students can work in groups (up to 2 people) to design and conduct a short-term flavor chemistry project. A 20 minute seminar (100 pts) and 5 page project report (50 pts) will be submitted at the end of the semester. All students are required to attend the presentations. Evaluation of the presentations will count as part of your participation grade.

Topic Approval – The topic selected must have aspects different or “new” from the content covered in the by the instructor (Scoville units of different hot sauces, Lambic beer flavor, etc. are acceptable topics). Topics will need to be submitted to the instructor by 10/31/16. A one paragraph explanation of the project is required at the time of submission.

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/honorcodes/honorcode.php>.

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

Training Programs

Community Provider Database

- 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/