FOS4222L/5225C
FOOD MICROBIOLOGY SYLLABUS
LABORATORY

Spring 2024

SCHEDULE AND CLASS LOCATION

When: MW: 1:00-3:50 pm
Where: FSHN 310

INSTRUCTOR

Dr. Naim Montazeri
Room 341A, FSHN Bldg, 572 Newell Dr.
Phone: (352) 294-3756
Email: nmontazeri@ufl.edu
Website: https://fshn.ifas.ufl.edu/about/faculty-bio-pages/montazeri/
Office Hours: Fridays 1-3 pm. Please make an appointment beforehand, as my availability may vary. Scheduling link with more availability options will be provided in Canvas.

TEACHING ASSISTANTS

Sherry Bensal (Ph.D. student): Email: sherry.bansal@ufl.edu
Razieh Mirmahdi (Ph.D. student): Email: rmirmahdi@ufl.edu
Office hours by appointment only.

COURSE DESCRIPTION

This course equips students with practical skills in food microbiology. A wide range of methods in isolating, characterizing, and enumerating microorganisms will be applied to food and environmental samples. This is a stand-alone course and is offered along with Food Microbiology (FOS4222) and in conjunction with Principles in Food Microbiology (FOS5225C).

COURSE OBJECTIVES

1. Recognize the most common foodborne pathogens and differentiate their specific growth conditions.
2. Assess the microbial spoilage of food products during storage.
3. Detect, quantify, and characterize hazardous microorganisms in water and food.
4. Identify desirable microorganisms and their effects in preservation and fermentation.
5. Evaluate the efficacy of mitigation strategies against foodborne pathogens.

FORMAT

Prior to the lab

- Students are expected to review each laboratory practice manual before attending each session. The lab may start with pop quizzes with bonus points.

During the lab

- **Attend the class by 12:50 pm to settle. The lab starts at 1:00 pm.**
- Do not come to the lab if you have a contagious illness or flu-like symptoms. In case of an illness, a doctor's note to be provided if missing a class activity.
- Leave all extra books and bags in the space provided in the back of the lab.
- Sanitize work area before and after you complete your work with a fresh 10% bleach solution or 70% ethanol.
- Put on your lab coat, gloves, and safety goggles before the lab starts.
- Perform the laboratory work in an organized and careful manner. Record all data, calculations, and other relevant information in your notebook.
- It is mandatory that students always wear a lab coat, as well as safety glasses and mask when working with liquid material that could be aerosolized.
- You are working with living organisms. Treat all microbial cultures as they are human pathogens.
- Some lab exercises will require you to come in outside of the normal laboratory class hours to complete subsequent steps of an experiment and/or record results.
- In case of any incident or injury, immediately report it the teaching assistant and the instructor.

COURSE ANNOUNCEMENTS

Course materials and announcements will be on Canvas. Check regularly and enable notification (click here for a step-by-step guide). Contact instructors and TAs via Canvas for prompt responses.

COURSE EVALUATIONS

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/.

TESTS AND GRADING

Final grade for FOS5225C is based on combined grades from the FOS4222 lecture (70%) and FOS4222L lab (30%). You cannot drop a test.

	Lab Midterm	Lab Final	Lab reports	Presentation
FOS 4222L	25%	25%	30%	20% (oral)
FOS 5225C	25%	25%	30%	10% (oral) + 10% (written)

Grading Scale: **A** (94 to 100), **A-** (90 to <94), **B+** (87 to <90), **B** (84 to <87), **B-** (80 to <84), **C+** (77 to <80), **C** (74 to <77), **C-** (70 to <74), **D+** (67 to <70), **D** (64 to <67), **D-** (61 to <64), **E** (0 to <61)
There will be no curving or readjustment based on class performance.

PRESENTATIONS

FOS4222L: Undergrad oral presentations will be delivered for 10-15 min as a group using power point slide show. Topics need to be approved by instructor. The purpose of this exercise is to pick a narrow topic related to Food Microbiology. General topics will not be accepted. Rubrics will be provided in Canvas.

FOS5225C. Grad students will deliver an *oral presentation* and a *written report* for a more in-depth overview of their presentation topic. The written report include critical review of the research literature (not review articles) and should be about 5 pages (excluding references) with 11 pt Arial font, single-spaced, and include min of 10 references.

E-LABORATORY REPORTS

Note: The laboratory reports will be written as a group, submitted to Canvas individually, and graded as a group. Students need to specify their share of the writing. This policy may change during the semester.

You are required to record your data in a notebook, but your report will be electronically submitted as a Word or PDF file through Canvas.

Data tables should contain both the raw data and the calculated means, along with standard deviations/errors, as per the instructions. Please note that screenshots of handwritten tables will not be accepted in your electronic lab reports. While you are allowed to include photos of your plates and tubes in your lab reports, you must also provide written explanations of the results. If reports are not appropriate, they will be returned, and you will have an additional week to complete.

You will include the following for **every** lab exercise (Word template will be provided):

- **Purpose: Briefly describe the purpose of each lab.** Give a brief overview of the background material and concepts for the lab(s). Include the relevance of the concepts to food safety and the food industry. Briefly describe the purpose of the experiment(s) (i.e. the objectives that were to be accomplished).
- **Methods (brief): Briefly describe your method in 10-15 line.** If any deviation from the protocol was performed, describe the changes to the protocol in detail. (Example: We serially diluted a bacterial broth culture in PBS as described in the lab manual on page X. Then 100 ul was spread plated from the -4, -5 and -6 dilutions onto three selective media: EMB, XLT4 and TCBS.)
- **Results:** Your submission to canvas will be a report on the raw data. Use tables, graphs, diagrams or pictures of the data collected during the experiment. Tables and figures should be labeled as you would see in a journal presentation. Also include a narrative of your description of data that is contained in these figures and tables. If any calculations were made, you must show sample calculations in this section. Also include any observations that were made during the experiment but are not represented in a figure or table. This section is simply for presentation of the data. Screenshots of tables or handwritings will not be accepted.
- **Discussion:** Explain your results and discuss your interpretation of results. In this section discuss your results and draw conclusion based on your data. This is your opportunity to show you understand the concepts involved in doing the experiment. It is important that you interpret and explain your results, especially any deviations from what you expected. There is no need to discuss all the plausible

reasons for error. If you believe an error was committed, explain the reason and what might have occurred. Refer to at least three research articles to compare and discuss your findings. Cite accordingly.

- **Literature Cited**: References will be required for some lab write ups. These online references should be from peer-reviewed journals and public health agencies, including FDA, CDC, or USDA. We encourage you to use Zotero (freely available, https://guides.uflib.ufl.edu/zoterocite) for reference management. Pick a format and be consistent. Here is an example for ASM format:

  Porto-Fett, A.C. S., J.E. Call, and J.B. Luchansky. 2008. Validation of a commercial process for inactivation of *Escherichia coli* O157:H7, *Salmonella Typhimurium*, and *Listeria monocytogenes* on the surface of whole muscle beef jerky. *J. Food Prot.* 71:918-926.

MINIMUM TECHNICAL SKILLS/REQUIREMENTS

To complete your tasks in this course, you will need a basic understanding of how to operate a computer, and how to use basic software.

The University of Florida expects students entering an online program to acquire computer hardware and software appropriate to his or her degree program. Most computers are capable of meeting the following general requirements. A student's computer configuration should include:

- Webcam; Microphone; Speakers or headphones; Broadband connection to the Internet and related equipment (Cable/DSL modem) for office hours.
- Your instructor might request that you obtain the iClicker Cloud (free for students) to respond to polls and in-class quizzes. This will be communicated in advance.
- Microsoft Office Suite installed (provided by the university)

Individual colleges may have additional requirements or recommendations, which students should review prior to the start of their program.

COURSE POLICIES

- *Attendance* is required. Please refrain from checking or sending e-mails, texts, etc during class or lab sessions. Students are expected to participate in class discussions.
- *Makeup exams* will only be given with the permission of the instructor if adequate notice and documentation (such as doctor's note) is provided in advance (at least 12 hours prior to the exam). Requirements for make-up exams, assignments, and other work in this course are consistent with university policies that can be found at catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/.
- Assignments must be submitted through Canvas as a text entry or Word/PDF file (no email submissions will be accepted).
- *Late assignment/report submittal*: A 10% pt penalty per day will be assigned for late assignments or reports turned in within two days after the due date. No submission will be accepted after two days past the due date.
- As a portion of class materials will be delivered online, you are responsible for observing all posted due dates, and are encouraged to be self-directed and take responsibility for your learning.

- Our class sessions may be audio/visually recorded for educational purposes. **As in all courses, unauthorized sharing of class materials is prohibited.**
- Be on time.

UF POLICIES

University Policy on Accommodating Students with Disabilities

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

University Policy on Academic Conduct

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 honesty 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://policy.ufl.edu/regulation/4-040/) specifies a number of behaviors that are in violation of this code and the possible sanctions.

Among the changes are inclusion of language on the use of generative **Artificial Intelligence and other related tools**. 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.

Netiquette and Communication Courtesy

All members of the class are expected to follow rules of common courtesy during, before, and after class, in all email messages, threaded discussions, and chats.

TECHNICAL HELP

For issues with technical difficulties for Canvas, please contact the UF Help Desk at:

- http://helpdesk.ufl.edu
- (352) 392-HELP (4357)
- Walk-in: HUB 132

Any requests for make-ups due to technical issues should be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You should e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

CAMPUS HELPING RESOURCES

New! Whole Gator is an important app to all sorts of campus sources. It is also accessible under Campus Resources Tab in Canvas. https://studentlife.ufl.edu/wholegator/.

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 Connections Center,* https://career.ufl.edu
- Complaints: https://hr.ufl.edu/manager-resources/employee-relations/
- Library Support**:** cms.uflib.ufl.edu/ask
- Teaching Center: teachingcenter.ufl.edu/
- Writing Studio: writing.ufl.edu/writing-studio/

FOS 4222L/5225C
FOOD MICROBIOLOGY (LAB) SYLLABUS AND DUE DATES
SPRING 2024
(SUBJECT TO CHANGE)

SYLLABUS

Date	Lab Activity
Jan 8	No Lab
Jan 10	No Lab
Jan 15	***No lab (Martin Luther King Jr. Day)***
Jan 17	Introduction – basic lab safety practices
Jan 22	1) Basic microbiology techniques - 1
Jan 24	1) Basic microbiology techniques - 2
Jan 29	2) Bacterial enumeration, identification, and data interpretation
Jan 31	2) Bacterial staining and microscopy use
Feb 5	3) Plate count – 1 Solid food
Feb 7	3) Plate count – 2 Liquid food (milk)
Feb 12	4) MPN testing of *E. coli*/coliforms - 1
Feb 14	4) MPN testing of *E. coli*/coliforms - 2
Feb 19	5) Antimicrobial Resistance - 1
Feb 21	5) Antimicrobial Resistance - 2
Feb 26	6) Fermentation - 1 (prep and day 0 sampling)
Feb 28	Mid-term review
Mar 4	6) Fermentation – 2 (day 7 sampling)
Mar 6	**Mid-term Exam**
Mar 11 & 13	***No lab (Spring break - Mar 9-16)***
Mar 18	6) Fermentation – 3 (data interpretation)
Mar 20	Finalizing presentation topics
Mar 25	7) Molecular detection of *Vibrio* – 1 (PCR)
Mar 27	7) Molecular detection of *Vibrio* – 2 (electrophoresis)
Apr 01	8) Detection and mitigation of viruses - 1
Apr 03	8) Detection and mitigation of viruses - 2
Apr 08	9) Use bioinformatic tools
Apr 10	Presentation techniques
Apr 15	TBD
Apr 17	Review for final exam
Apr 22	**Students' presentation - 1**
Apr 24	**Students' presentation - 2**
Apr 30	**Final exam** (3:00-5:00 pm)

DUE DATES

Date	Lab reports/activities
Jan 16	Online lab safety training
Jan 29	1) Basic microbiology techniques

Feb 7	2) Bacterial enumeration, identification, and data interpretation
Feb 19	3) Plate count in food and milk
Feb 26	4) MPN testing of *E. coli*/coliforms in water
Mar 8	5) Antimicrobial Resistance
Mar 17	**Presentation topics**
Mar 25	6) Fermentation
Apr 03	7) Molecular detection of *Vibrio*
Apr 12	8) Detection and mitigation of viruses
Apr 17	**Presentation slides**
Apr 23	9) Use bioinformatic tools
May 1	**Presentation** - 5225C written report