# FOS4222
# FOOD MICROBIOLOGY SYLLABUS
# LECTURE

**Spring 2024**

## SCHEDULE AND CLASS LOCATION

When: MWF, 5th Period 11:45 am-12:35 pm
Where: Williamson (WM) Hall 0100 (click here for the map)

## 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

Samantha Dicker (MSc student): Email: sdicker@ufl.edu
Office hours by appointment only.

## COURSE DESCRIPTION

This course covers basic and applied aspects of food microbiology with particular focus on microbial pathogens transmitted to humans through food and water; persistence in the environment and through the food supply chain; mitigation strategies; preservation and control strategies; fermentation; spoilage; pathogenesis; microbial detection; and risk-assessment.

## COURSE OBJECTIVES

1. Demonstrate microbial growth and survival in water and food under various environmental conditions.
2. Delineate the basis for food preservation and fermentation techniques.
3. Differentiate the pathogenesis of various foodborne and waterborne pathogens.
4. Critically elucidate methods for detection, enumeration, and control of pathogens.
5. Discuss the basic tenets behind risk assessment and policies applicable to food safety.

## COURSE PREREQUISITES

MCB2000, MCB3023, or permission of instructor.

## RELEVANT COURSES

- FOS6226C Advanced Food Microbiology
- FOS4223/6224 Food and Environmental Virology
- FOS6936 Food Safety Systems
- ANS6637 Quantitative Microbial Risk Assessment of Pathogens in Food Systems
- MCB5505 Virology

## TEXTBOOK

Adams, Martin R. Moss, Maurice O. McClure, Peter J. (2016). *Food Microbiology (4th Edition).* Royal Society of Chemistry. https://app.knovel.com/hotlink/toc/id:kpFME00042/food-microbiology-4th/food-microbiology-4th. Full text is freely available to the UF students through Knovel.com (use your UF email address to sign up).

## 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

**There will be four mid-term and one final exams.** The guest lectures are included in the exams. Basic calculators are allowed on exams (no smart electronic device).

**FOS4222 Final grade** (see below) You cannot drop a test. See below regarding makeup exams.

| Activity | Grade percentage |
|---|---|
| Quizzes* | 30% |
| Mid-terms | 40% |
| Final Exam | 30% |

**Do not include pop quizzes.*

**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.

## PUBLIC HEALTH PROTECTIONS

- Do not come to the class if you have a contagious illness or flu-related symptoms. In case of an illness, a doctor's note to be provided if missing a class activity.

## 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

### *Technical Difficulties*

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/

# FOS4222
# FOOD MICROBIOLOGY (LECTURE)
# SPRING 2024
# (SUBJECT TO CHANGE)

| Session | Date | LECTURE TOPICS | Guest lecturer | Activity |
|---|---|---|---|---|
| *Module 1: Intro, Growth, and Enumeration Techniques* | | | | |
| 1 | Jan 8 | Introduction | | |
| 2 | Jan 10 | Microbial growth kinetics | | |
| 3 | Jan 12 | Culture-based bacterial enumeration - 1 | | |
| - | Jan 15 | ***Martin Luther King Jr. Day - No Class*** | | |
| 4 | Jan 17 | Culture-based bacterial enumeration - 2 | | |
| *Module 2: Food Spoilage* | | | | |
| 5 | Jan 19 | Food spoilage - introduction | | |
| 6 | Jan 22 | Spoilage of muscle foods and dairy | | |
| 7 | Jan 24 | Spoilage of fruits and vegetables | | |
| *Module 3: Food Preservation* | | | | |
| 8 | Jan 26 | Chemical and biological preservation | | |
| 9 | Jan 29 | Physical preservation | | |
| *Module 4: Review and Exam 1* | | | | |
| 10 | Jan 31 | Review for Exam 1 | | |
| 11 | Feb 2 | **Exam 1** | | |
| *Module 5: Food Fermentation* | | | | |
| 12 | Feb 5 | Yeasts and fermentation | | |
| 13 | Feb 7 | Lactic acid bacteria | | |
| 14 | Feb 9 | Microbiology of fermented beverages | | Take home quiz 1 |
| *Module 6: Gram-Positives Spore Formers* | | | | |
| 15 | Feb 12 | Bacterial pathogenesis | | |
| 16 | Feb 14 | Sporulation | | |
| 17 | Feb 16 | *Bacillus* spp. | | |
| 18 | Feb 19 | *Clostridium* spp. | | |
| *Module 7: Review and Exam 2* | | | | |
| 19 | Feb 21 | Review for Exam 2 | | |
| 20 | Feb 23 | **Exam 2** | | |
| *Module 8: Gram-Positives Non-spore Formers* | | | | |
| 21 | Feb 26 | *Listeria monocytogenes* | | |
| 22 | Mar 28 | *Staphylococcus aureus* | | |
| *Module 9: Gram-Negatives, Part 1* | | | | |
| 23 | Mar 1 | *Escherichia* and *Shigella* spp. | | |
| 24 | Mar 4 | *Vibrio* spp. | | |
| 25 | Mar 6 | *Campylobacter* spp. | | |
| 26 | Mar 8 | Cronobacter and Yersinia | | Take home quiz 2 |
| | | ***Spring break - no class (Mar 9-16)*** | | |

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|---|---|---|---|---|
| 27 | Mar 18 | *Salmonella enterica* | | |
| *Module 10: Review and Exam 3* | | | | |
| 28 | Mar 20 | Review for Exam 3 | | |
| 29 | Mar 22 | **Exam 3** | | |
| *Module 11: Foodborne viruses* | | | | |
| 30 | Mar 25 | Virology - principles | | |
| 31 | Mar 27 | Enteric viruses | | |
| 32 | Mar 29 | Bacteriophages | | |
| *Module 12: Sampling and Microbial Detection* | | | | |
| 33 | Apr 1 | Food and environmental sampling | | |
| 34 | Apr 3 | Microbial isolation and concentration | | |
| 35 | Apr 5 | Molecular detection methods | | Take home quiz 3 |
| 36 | Apr 8 | Utilization of microbial indicators/surrogates | | |
| *Module 13: Review and Exam 4* | | | | |
| 37 | Apr 10 | Review for Exam 4 | | |
| 38 | Apr 12 | **Exam 4** | | |
| *Module 14: Predictive Microbiology and Microbial Risk Analysis* | | | | |
| 39 | Apr 15 | Predictive Microbiology | | |
| 40 | Apr 17 | Principles of Quantitative Microbial Risk Assessment (QMRA) | | |
| 41 | Apr 19 | Case study | | |
| 42 | Apr 22 | Food Safety Risk Management | | |
| *Module 15: Reviews and Final Exam* | | | | |
| 43 | Apr 24 | Review for Final Exam | | |
| 44 | May 03 | **Final exam** (modules 13 and 15) (7:30-9:30 am) | | |