MCB 3023: Principles of Microbiology, Fall 2025 (3 Credits)

Preliminary Syllabus

Course description*: (from the UF catalog)* Introduces the principles and techniques of microbiology, genetics, taxonomy, biochemistry, and ecology of microorganisms. Required of all majors and students who will enroll in more advanced courses in the Department of Microbiology and Cell Science.

Webpage: Canvas (https://ufl.instructure.com/). Please select MCB 3023, or follow this link: https://ufl.instructure.com/courses/543097

Communication: for questions regarding class and textbook content please use the Discussion Board, for issues on assignments and class organization please first check the syllabus, the assignment section and calendar on Canvas, then post your questions on the discussion board. For all other issues contact the instructors Willm Martens-Habbena or Nils Averesch directly.

Instructors:
This course is co-taught by two instructors:

Dr. Willm-Martens-Habbena, UF/IFAS, Fort Lauderdale Research and Education Center
Responsible for modules 1.1 to 2.3

Office hours: - online through Canvas or via Skype by appointment after email request (please send an e-mail with three suggested times and I will choose one for us to meet).
Contact Information:
Canvas messaging (preferred): Follow this link: https://ufl.instructure.com/conversations -filter=type=inbox&course=course_543097 and select "new message".
In the address field under "Teacher" select Willm Martens-Habbena and compose your message.
Email: w.martenshabbena@ufl.edu (if you don't have access to the canvas platform and need to contact us in an emergency).
Phone: 954-577-6372 (by appointment, use Canvas messaging to schedule appointment).
Skype: willmmh (by appointment, use Canvas messaging to schedule appointment).

Dr. Nils Averesch, UF/IFAS, Space Life Science Laboratory
Responsible for modules 3.1 to 4.3

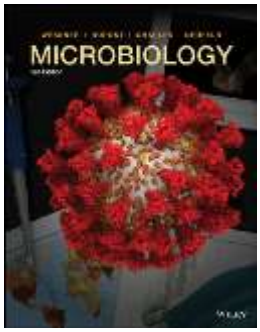
Office hours: - online through Canvas or via Zoom by appointment after email request (please send an e-mail with three suggested times and I will choose one for us to meet).
Contact Information:
Canvas messaging (preferred): Follow this link: https://ufl.instructure.com/conversations -filter=type=inbox&course=course_543097 and select "new message".
In the address field under "Teacher" select Nils Averesch and compose your message.
Email: n.averesch@ufl.edu (if you don't have access to the canvas platform and need to contact us in an emergency).
Zoom: https://ufl.zoom.us/j/94353711625 (by appointment, use Canvas messaging to schedule appointment).

Further information: MCB 3023 is an upper division course on Microbial Biology. The course is delivered asynchronously via Canvas. This course will cover prokaryotic and eukaryotic microbes and viruses but will emphasize bacteria. This course will provide students with a conceptual background in microbiology enabling students to take more advanced courses in related fields.

Student Learning Outcomes: After successful completion of this course, students will be able to:

1) Contrast morphology and physiology of basic groups of microbes, including Bacteria, Archaea, eukaryotic microbes, and viruses.
2) Classify major pathways of energy conservation in microbes and explain their main features of each pathway.
3) Interpret growth patterns and growth requirements regarding methods for cultivation and sterilization of microbes.
4) Describe major functions of microbes in global biogeochemical cycles.
5) Infer types of symbiotic interactions between microbes and other organisms, including commensalism, mutualism, and parasitism, from on morphological and physiological data.
7) Identify common features of microbial pathogens, and explain general mechanisms of infection, pathogenicity, and virulence.
8) Judge whether organisms can be considered beneficial or pathogenic and define criteria for the categorization.
9) Explain and discuss general principles of the innate and adaptive immune system.

Learning Materials: - Required Textbook: (The only required material for this course):



Wessner, Dupont, Charles, Neufeld:
Microbiology
Wiley, NJ. **3rd Edition**, 2020
https://www.wiley.com/en-us/Microbiology%2C+3rd+Edition-p-9781119592402

ISBN-13: 978-1-119-59240-2 (eBook, downloadable PDF)
ISBN-13: 978-1-119-71587-0 (Loose-Leaf collection)
OR: Available through UF ALL ACCESS/RedShelf

- All other materials will be made available online through Canvas

Online help with classroom technology: http://helpdesk.ufl.edu/

Prerequisites: BSC 2010 and BSC 2010L, or equivalent, with minimum grades of C; BSC 2011 and BSC 2011L, or equivalent, or AGR 3303, with minimum grade/s of C.

Discussion Board: A general discussion board is available in Canvas:
https://ufl.instructure.com/courses/543097/discussion_topics
It is very useful, please post and answer your questions on class content and organization there. Postings and answers are monitored by the instructors to make sure no mistakes get propagated. There are several discussion themes. Please post your questions in the adequate section. The discussion board is also used for certain graded assignments to prepare for lecture and for the group monograph assignment.

Assessment of Learning:

Assignments (400 points total): Activities will be assigned by module. The activities include timed multiple-choice quizzes, and discussion boards in groups. Groups will be randomly generated at the beginning of the course. The activities are mandatory and count towards the final grade. They should be completed by the deadline indicated.

There will be eight quizzes (each counting 30 points) with 15 questions for a total of 240 points. There will be six group activity assignments (counting 10-30 points each), totaling 160 points.

Exams (600 points total): Exams will assess your knowledge of the concepts covered in this class and your ability to apply them by solving problems that you will not have been previously exposed to. Exams will be proctored through HonorLock. To access quizzes and exams, click on HonorLock in the menu on the left and then select your quiz/exam (once it opens). **Please note that you will need your student ID, provide a room scan, etc. There will be a recording of your audio and of the webcam. Please also note that you will need Google Chrome and have the HonorLock extension installed for this.** After you setup the HonorLock extension in Chrome, you can take the quizzes and exam at any time (while they are open).

The assessment will be performed in **four mandatory mid-term exams**. The student will be given the option to take a final cumulative exam to improve the grade obtained through the mid-term exams.

Mid-term exams (600 points total): There will be four 50 minutes proctored mid-term exams (150 points each) with multiple choice questions. All exams are mandatory and will count towards the final grade. Exams will test learning and understanding of material presented in the textbook and supplied learning material as well as in assignments but will also assess integration and application skills.

Final (optional-600 points). The final exam is optional. It will be held during finals week. Questions will assess basic microbiology concepts and advanced comprehension. The final cannot be taken if the student misses any of the mid-term exams. The student will keep the highest grade (either the final grade or the sum of the points of all the four midterm tests).

Grading Scale (straight scale, 1,000 points total):

A	940-1,000
A-	900-939
B+	870-899
B	840-869
B-	800-839
C+	770-799
C	740-769
C-	700-739
D+	670-699
D	640-669
D-	610-639
F	609 or below

For information on current UF policies for assigning grade points, see: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Attendance and Make-Up Exams:

Requirements for class attendance, make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Excused Absences:
Documentation MUST be provided for absences caused by serious illness, accident, jury duty, or death in the immediate family. You must contact the instructors IN ADVANCE of the missed exam, and we will arrange an alternative time for the exam.

After the Exam:
The grades will be available on Canvas three days after the exam, unless notified by an announcement.

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 on 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.

Use of Artificial Intelligence (AI) Tools:
Assignments in MCB 3023: Principles of Microbiology are subject to rigorous academic standards. While the use of AI tools, such as ChatGPT or similar, may serve as valuable aids for research, idea generation, or clarifying concepts, they must be used responsibly and ethically. The submitted work should reflect the student's own understanding and effort. To ensure academic integrity:

1. AI Content Analysis: All written assignments will be analyzed using an AI detection tool to evaluate the proportion of AI-generated text.
2. Threshold for AI-Generated Content: If more than 50% of the text in an assignment is identified as AI-generated, the assignment will receive at most half the possible points.
3. Best Practices for Students:
    - Clearly indicate any sections where AI tools were used and describe how they contributed to your work.
    - Focus on demonstrating your critical thinking and original analysis.

4. Consequences of Violations:
    - Submissions with significant portions of AI-generated content, beyond the allowed threshold, will be flagged as Honor Code violations.
5. Guidelines for Responsible AI Use:
    - Do not submit AI-generated text as content of an assignment. This would be plagiarism and a UF Honor code violation. To ensure it aligns with course expectations and academic standards:
    - AI may be used for tasks such as brainstorming, grammar checks, or formatting suggestions.
    - Do not rely on AI for creating substantial portions of your content or crafting arguments. Those should reflect your own critical input.

Online Course Evaluation Process:
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. 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/.

Services for Students with Disabilities:
The Disability Resource Center (0001 Reid Hall, 352-392-8565, https://disability.ufl.edu/) 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.

UF Counseling Services: (www.counseling.ufl.edu) available on-campus for students having personal problems or seeking help with career and academic goals including:
- University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling
- Student Mental Health, Student Health Care Center, 392-1171, personal counseling
- U Matter We Care, www.umatter.ufl.edu/
- Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling
- Student Success Initiative, http://studentsuccess.ufl.edu
- Career Resource Center, First Floor Reitz Union, 392-1601, career development assistance and counseling: https://career.ufl.edu/

Student Complaints: See https://pfs.tnt.aa.ufl.edu/state-authorization-status/#student-complaint

Course Schedule:

Weeks	Module # and Name	Assignments
Week 1 Thursday, 08/21/2025	Module 1.1 Introduction to the Microbial World	Graded Assignment A1: Group Discussion: What microorganisms have you encountered? (opens 08/21/2025, closes 08/25/2025 11:59pm)
Week 2 08/25/2025	Module 1.2 Introduction to Bacteria	Graded Quiz Q1: (Module 1.1 – 1.2; opens 08/25/2025, closes 09/01/2025 at 11:59pm)
Week 3 09/01/2025 (Monday: Labor Day)	Module 1.3 Introduction to Archaea & Eukaryota	Graded Assignment A2: Group Discussion: The enigmatic domain Archaea (opens 09/01/2025, closes 09/08/2025 at 11:59pm)
Week 4 09/08/2025	Module 1.4 Introduction to Viruses & Cultivating Microorganisms	Graded Quiz Q2: (Module 1.3 + 1.4; opens 09/08/2025, closes 09/15/2025 at 11:59pm) **Midterm Exam M1:** **(opens 09/10/2025, closes 09/16/2025 at 11:59pm**
Week 5 09/15/2025	Module 2.1 DNA Replication and Gene Expression	Graded Assignment A3: Group Discussion: Genomics and Gene Expression (opens 09/15/2025, closes 09/22/2025 at 11:59pm)
Week 6 09/22/2025	Module 2.2 Genetic and Genomic Analysis of Microbes	Graded Quiz Q3: (Module 2.1 + 2.2; opens 09/22/2025, closes 09/29/2025 at 11:59pm)
Week 7 09/29/2025	Module 2.3 Regulation of Gene Expression	Graded Quiz Q4:

		(Module 2.3; opens 09/29/2025, closes 10/06/2025 at 11:59pm) **Midterm Exam M2:** **(opens 10/01/2025, closes 10/07/2025 at 11:59pm)**
Week 8 10/06/2025	Module 3.1 Microbial Physiology and Ecology: Metabolism	Graded Quiz Q5: (Module 3.1; opens 10/06/2025, closes 10/13/2025 at 11:59pm)
Week 9 10/13/2025	Module 3.2 Microbial Physiology and Ecology: Biogeochemical Cycles	Graded Assignment A4: Group Discussion: Microbial Metabolism and Biogeochemical Cycles (opens 10/13/2025, closes 10/20/2025 at 11:59pm)
Week 10 10/20/2025	Module 3.3 Microbial Physiology and Ecology: Microbial Ecosystems	Graded Quiz Q6: (Modules 3.2 and 3.3; opens 10/20/2025, closes 10/27/2025 at 11:59pm)
Week 11 10/27/2025	Module 3.4 Microbial Physiology and Ecology: The Microbiology of Food and Water; Microbial Symbionts	Graded Quiz Q7: (Modules 3.4; opens 10/27/2025, closes 11/03/2025 at 11:59pm) **Midterm Exam M3:** **(opens 10/29/2025, closes 11/04/2025 at 11:59pm)**
Week 12 11/03/2025	Module 4.1 Microbes and Disease: Introduction to Infectious Diseases and Immune Responses	Graded Assignment A5: Group Discussion: Human Genome Editing (opens 11/03/2025, closes 11/10/2025 at 11:59pm)
Week 13 11/10/2025	Module 4.2 Microbes and Disease: Bacterial and Viral Pathogenesis	Graded Quiz Q8: (Modules 4.1 and 4.2; opens 11/10/2025, closes 11/17/2025 at 11:59pm)
Week 14 11/17/2025	Module 4.3 Microbes and Disease: Control of Infectious Diseases	Graded Assignment A6: Group Discussion: Vaccines (opens 11/17/2025, closes 11/24/2025 at 11:59pm) **Midterm Exam M4:** **(opens 11/19/2025, closes 12/02/2025 at 11:59pm)**
Week 15 11/24/2025	Thanksgiving Week	Enjoy Vacation or take more time to prepare for and take M4!
Week 16 12/01/2025 (Wednesday: last day of class)	Study Time / Reading Days	
Finals Week **12/04/2025 – 12/10/2025**	Modules 1-4 (entire course)	**Final Exam (Optional):** **(opens 12/08/2025, closes 12/11/2025 at 11:59pm)**