

MCB 3023: Principles of Microbiology, Fall 2023 (3 credits)

Preliminary Syllabus

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 zoom:
by appointment after email request (please send an e-mail with three suggested times
and I will choose one for us to meet.)

Dr. Ulrich Stingl, UF/IFAS Fort Lauderdale Research and Education Center
Responsible for modules 3.1 to 4.3, beginning February 27th, 2023.

Office hours: - online through Canvas or via skype:
Wednesday, 2pm-5pm, Thursday, 2-5pm, or by appointment (if you cannot make it to
office hours, please send an e-mail with three suggested times and I will choose one for
us to meet.)

Webpage: Canvas (<https://ufl.instructure.com>). Please select MCB 3023, or follow this link:
<https://ufl.instructure.com/courses/487909>

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.

Further information: MCB3023 is an upper division course on Microbial Biology. This course will cover prokaryotic and eukaryotic microbes and viruses, but will emphasize bacteria. This course will provide students 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) Compare and contrast morphology and physiology of basic groups of microbes, including Bacteria, Archaea, eukaryotic microbes and viruses.
- 2) Compare and contrast major pathways of energy conservation in microbes. List the main features of each pathway.
- 3) Describe growth patterns, requirements for growth, and methods for cultivation and sterilization of microbes.
- 4) Describe major functions of microbes in global biogeochemical cycles.
- 5) List different types of symbiotic interactions between microbes and other organisms, including commensalism, mutualism, and parasitism, and provide examples of each.
- 6) Describe microbe-plant and microbe-animal interactions and explain their physiological basis.

- 7) Compare and contrast beneficial organisms, including those involved in food preparation and biotechnology.
- 8) Describe common features of microbial pathogens, and explain general mechanisms during infection, pathogenicity and virulence.
- 9) Describe and compare 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 (E-text, 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; CHM 2200 or CHM 2210 (can be taken during same semester, i.e. co-requisite), with minimum grade of C; microbiology majors only.

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

Contact Information:

Dr. Willm Martens-Habbena

Canvas messaging (preferred): Follow this link:

https://ufl.instructure.com/conversations#filter=type=inbox&course=course_487909

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 for 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. Ulrich Stingl:

Canvas messaging (preferred): Follow this link:

https://ufl.instructure.com/conversations#filter=type=inbox&course=course_487909

and select new message.

In the address field under Teacher select Ulrich Stingl and compose your message.

Email: ustingl@ufl.edu (If you don't have access to the canvas platform and need to contact us for an emergency)

Phone: 954-577-6326 (by appointment, use Canvas messaging to schedule appointment)

Skype: ulistingl (by appointment, use Canvas messaging to schedule appointment)

Discussion Board: A general discussion board is available in Canvas.

https://ufl.instructure.com/courses/487909/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 missed any of the mid-term exams. The student will keep the highest grade (either the final's grade or the sum of the points of all the four midterm tests).

For information on current UF policies for assigning grade points, see:

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

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/ugrad/current/Pages/academic-regulations.aspx>

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.

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

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

Academic Honesty: As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.

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.

Accommodations for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. This office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

UF Counseling Services: available on-campus for students having personal problems or lacking clear career and academic goals includes:

- [University Counseling Center](#), 301 Peabody Hall, 392-1575, personal and career counseling
- [Student Mental Health](#), Student Health Care Center, 392-1171, personal counseling.
- [Sexual Assault Recovery Services \(SARS\)](#), Student Health Care Center, 392-1161, sexual assault counseling
- [Career Resource Center](#), Reitz Union, 392-1601, career development assistance and counseling

Student assessment of instruction: 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. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Student Complaints: See: <https://distance.ufl.edu/getting-help/>

Course Schedule:

Weeks	Module # and Name	Assignments
Week 1 Wednesday 08/23/2023	Module 1.1 Introduction to the Microbial World	Graded assignment A1: Group discussion – Which microorganisms have you encountered? (opens 08/23/2023, closes 08/28/2023 at 1pm)
Week 2 08/28/2023	Module 1.2 Introduction to Bacteria	Graded quiz Q1: (Module 1.1 – 1.2; opens 08/28/2023, closes 09/05/2023 at 1pm)
Week 3 09/04/2023 (Monday Labor Day)	Module 1.3 Introduction to Archaea & Eukaryotic Microbes	Graded assignment A2: Group discussion: The enigmatic domain Archaea. (opens 09/04/2023, closes 09/11/2023 at 1pm)
Week 4 09/11/2023	Module 1.4 Introduction to Viruses &	Graded quiz Q2 (Module 1.3 + 1.4; opens 09/11/2023, closes 09/18/2023 at 1pm)

	Cultivating Microorganisms	Midterm Exam M1 (opens 09/13/2023, closes 09/19/2023 at 1pm)
Week 5 09/18/2023	Module 2.1 DNA Replication and Gene Expression	Graded assignment A3: Group activity: Genomics and Gene expression (opens 09/18/2023, closes 09/25/2023 at 1pm)
Week 6 09/25/2023	Module 2.2 Genetic and Genomic Analysis of Microbes	Graded quiz Q3 (Module 2.1 + 2.2; opens 09/25/2023, closes 10/03/2023 at 1pm)
Week 7 10/02/2023 (10/6-7/2023 Homecoming)	Module 2.3 Regulation of Gene Expression	Graded quiz Q4 (Module 2.3); opens 10/02/2023, closes 10/09/2023 at 1pm) Midterm Exam M2 (opens 10/04/2023, closes 10/11/2023 at 1pm)
Week 8 10/09/2023	Module 3.1 Microbial Physiology and Ecology: Metabolism	Graded quiz Q5 (Module 3.1; opens 10/09/2023, closes 10/16/2023 at 1pm)
Week 9 10/16/2023	Module 3.2 Microbial Physiology and Ecology: Biogeochemical cycles	Graded assignment A4: (opens 10/16/2023, closes 10/23/2023 at 1pm)
Week 10 10/23/2023	Module 3.3 Microbial Physiology and Ecology: Microbial Ecosystems	Graded quiz Q6 (Modules 3.2 and 3.3; opens 10/23/2023, closes 10/30/2023 at 1pm)
Week 11 10/30/2023	Module 3.4. Microbial Physiology and Ecology: The Microbiology of Food and Water	No Assignment (midterm study) Midterm Exam 3 (opens 11/01/2023, closes 11/07/2023 at 1pm)
Week 12 11/06/2023 (11/10/2023 Veterans Day)	Module 3.5 Microbial Physiology and Ecology: Microbial Symbionts	Graded quiz Q7 (Modules 3.4 and 3.5; opens 11/06/2023, closes 11/13/2023 at 1pm)
Week 13 11/13/2023	Module 4.1 Microbes and Disease: Introduction to Infectious Diseases and Immune Responses	Graded assignment A5: Human Genome Editing (opens 11/13/2023, closes 11/20/2023 at 1pm)
Week 14 11/20/2023	Module 4.2	Graded quiz Q8 (modules 4.1 and 4.2; opens 11/20/2023, closes 11/27/2023 at 1pm)

(11/22-25/2023 Thanksgiving)	Microbes and Disease: Bacterial and Viral Pathogenesis	
Week 16 11/27/2023 (Wed, 12/06/2023 last day of class)	Module 4.3 Microbes and Disease: Control of Infectious Diseases	Midterm exam 4 (opens 11/26/2023, closes 12/02/2023 at 1pm) Graded assignment A 6: Vaccines (opens 11/27/2023, closes 12/04/2023 at 1pm)
Finals week 12/09/2023 – 12/15/2023	Optional Final Exam	(opens 12/09/2023, closes 12/15/2023 at 1pm)