MCB2000 Microbiology

Fall 2025
Online Asynchronous, 3-Credits

Karim Asghari, Ph.D.
1046 Microbiology Bldg. 980
352-392-5226 Office
352-214-2469 Cell
asghari@ufl.edu
Office hours – Tuesdays and Thursdays 12:00-2:00pm-352-214-2469

I genuinely care about your success in this course. Please reach out to me via email, phone calls, or text messages. Your well-being during the semester is paramount to everything else. Please take care of your health while going through these stressful times in your professional life. Let me know if I can be of any assistance to you. I wish you all the best with your academic and professional endeavors.

Course Description & General Education Purpose

Explore prokaryotic cell structure and function. Compare prokaryotes vs. eukaryotes. Study microbial growth, physiology, genetics, metabolism, and their role in chemical transformations, infectious disease, public health, and agriculture. Exploring the role of host defense mechanism in fighting infectious diseases are also discussed. Fundamental concepts are discussed, followed by beneficial and harmful actions of microorganisms as they affect our lives.

Course Prerequisites

None. There are no prerequisites for this course.

Course Learning Objectives

Study of the basic microbiological principles, microbiological fundamentals, and applications: including medical, environmental, industrial microbiology, the relevant terminology in microbiology. Specific area of study includes:

- Students will understand and comprehend the structure, metabolism, genetics, and impact of various microbes such as bacteria, viruses, fungi, and parasites on their environment.
- Understanding the microbial world and its impact on our lives (Microbes and human welfare). Knowing that Microbes are essential for life, and their activities support life and maintain the livability on planet earth.
- Exploring the diversity of microbial metabolism and genetics, and their role in diverse microbial activities such as Microbiome, Bioremediation, Pathogenicity, etc.

- Explore and understand microbial cell structure and function, the differences between prokaryotes and eukaryotes. Outline structures possessed by microbes that contribute to microbial activities and interactions with others.
- Understanding microbes as agents of infectious diseases including the type of virulence factors they possess, and their mode of transmission.
- Explore the human immune system and its role in encountering infectious diseases. Immunology discussion also includes Immunodeficiency, Hypersensitivity, Autoimmunity, and Vaccine development.
- Explore the role of therapeutics and antimicrobial drugs such as antibiotics, antiviral, antifungal, and antiparasitic drugs and study the mechanism of their action.
- Explore the role of microbes in human welfare and maintaining the health of planet earth (the Big Picture). Area of discussion also includes food microbiology, industrial and environmental microbiology
- Microbes are everywhere and their activities directly impact all forms of life and health of the planet earth.

Outline of topics discussed in this course

- Explore prokaryotic cell structure, Eukaryotes vs. Prokaryotes
- Study of Physiology, Metabolism and Microbial growth
- Genetics of microorganisms, Genetic Engineering
- Host-Parasite Interactions
- Mechanism of Pathogenesis, Role of Virulence Factors
- Selected Infectious diseases
- Immune system, Host Defense Mechanism /Vaccines
- Antimicrobial AGENTS, Chemotherapeutics
- Microbial ecology and Symbiosis
- Applied and environmental microbiology
- Food, water, soil, and industrial Microbiology

This course closely follows the ASM (American Society for Microbiology) Recommended Curriculum Guidelines for Undergraduate Microbiology, which include:

- Cell Structure and Function
- Role of Mutation and Horizontal Gene Transfer in Microbial Diversity
- Exploring the diversity of microbial metabolism
- Discussing Flow of Genetic Information
- Microbiome and Impact of Microbial Activities on Human Welfare

Student & Instructor Expectations

I am committed to (1) providing a welcoming atmosphere; (2) teaching you something new and unexpected within the course topics; and (3) introducing you to relevant topics & ideas. I am available during Zoom office hours which are posted within Canvas.

For this course to run smoothly, I expect students to:

- **Have** a computer, and stable internet connection (see the section below on “Online Submissions”).
- **Check Canvas** for announcements at least twice a week. I will post an announcement regularly to give updates and class feedback.

- If you ever have questions or need clarification on instructor feedback, please message or attend office hours.
- Participate in class with **honesty**.
- **Be responsible for keeping up with due dates**. Use Canvas to identify all due dates. All deadlines are set for 11:59 pm ET. Late work is not accepted. Extra time has been built into all deadlines and due dates.
- **Submit work early**, if necessary. If you work or have extracurricular commitments that impact your ability to meet a course deadline, you need to submit quizzes, and exams before the due date.
- **Late Work and Makeup Policy**. Due dates are strictly enforced. Assignments remain open for several days. No makeup or late work is accepted except for medical excuses granted prior to the assignment deadline.
- **Student-Instructor Communication Tool**. If you think a question has been graded unfairly or if you missed a quiz or assignment deadline, use Canvas messaging.
- Students should expect a response to text messages and emails within 24 hours.
- Individualized feedback is available to all students on a one-on-one appointment basis.
- Email feedback is provided directly to students who may be at risk based on lower exam scores.
- **Feedback**. I invite your feedback in both midterm and end-of-term GatorEvals and plan to continuously improve student experience within the course. Your opinion is highly valued.]
- **Use of Artificial Intelligence (AI).** Generative AI tools may be used to enhance some assignments in this course. Assignment instructions will differentiate between distinct human and AI tasks. Any work that is done using generative AI must be cited in your submission.
- **Discussion Board.** Use **Course Question Discussion Board**, for general course questions that others may have too. I will monitor and read the discussions. I may post to the entire class, within groups, or message you individually concerning the discussion to give you feedback.
- Use **Canvas Inbox (messaging tool)** for questions that are specific to your grades or submissions
- **Email & phone correspondence** are for (1) setting a meeting time for office hours, (2) DRC accommodations; (3) emergency situations; or (4) highly sensitive situations.
- A respectful tone is used by all community members in all forms of communication.
- Written communication, both formal and informal, uses the official language of instruction rather than popular online abbreviations and graphic elements such as those sometimes used in social media.
- Video interactions reflect a respectful tone in verbal communications and body language.
- Spelling, punctuation, and grammar are correct.

Online Submissions

Students are responsible for verifying assignments are successfully submitted into Canvas. The instructor cannot be responsible for internet connections or failures. Locating a hard-wired connection (UF or public library) greatly reduces the instance of technical issues. Contact the instructor early if you foresee difficulty with maintaining a hard-wired connection (e.g., military service or living abroad). UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Required Technology & How to Obtain the Technology

- The e-textbook for this course is fully online. **Microbiology Fundamentals, An Introduction** (Tortora, Funke, and Case) 14th Edition, Online Edition is from **MasteringMicrobiology** by Pearson Publishing. This electronic textbook is required.

- Instructions on how to purchase and activate the E-Book are within the Canvas course. Do not purchase a paper edition.
- This e-textbook provides complete access to textbook chapters, homework, quizzes, figures, tables, animations, etc. The e-textbook serves as a reference that provides tutorial information, helps students prepare for the lectures, and provides supplemental materials for the lectures. It also provides practice exams. Students may take these exams multiple times. Most of the tables, figures, and animations used in lectures and lecture notes come from the e-book.

Required Technology & Digital Information Literacy Skills

- Using email with attachments
- Creating and submitting files in commonly used word processing program formats
- Downloading and installing software
- Using spreadsheet programs
- Using apps in digital devices
- Using web conferencing tools and software
- Using the Pearson MyLab Course Website Access the Study Area to watch videos and animations, take practice quizzes, and more. Your work in the Study Area does not report to your instructor's grade book.
- Posting your questions and concerns in Discussion Board
- Using the Discussion Board-Introduce Yourself, and Briefly introducing yourself to your fellow classmates.
- Engaging in course-related discussions on Canvas to share insights and ask questions.

Required Digital Information Literacy Skills

- Use of Artificial Intelligence (AI)--Generative AI tools may be used to enhance some assignments in this course. Assignment instructions will differentiate between distinct human and AI tasks. Any work that is done using generative AI must be cited in your submission.
- Using online libraries and databases to locate and gather appropriate information
- Using computer networks to locate and store files or data
- Using online search tools for specific academic purposes, including the ability to use search criteria, keywords, and filters
- Analyzing digital information for credibility, currency, and bias (e.g., disinformation, misinformation)
- Properly citing information sources

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Course (Modules) Schedule

Course contents are presented in (weekly) modules. Each Module has ONE set of Lecture Notes and THREE Lecture Videos. There are three Modules per exam. Each Module also contains a set of Quiz/Homework or a Perusall Discussion Activity. There are three Modules per exam. All deadlines occur at 11:59pm ET on the last day of submission window.

Course (Modules) Schedule

Date/Module	Topics	Assessments/Activities	Submission Window
Modules 0, 1 08/18-08/31	Course Orientation, Introduction to Microbiology, and Exploring Microbial World	Syllabus/Orientation Quiz, Honorlock Quiz, Perusall 1 Module 1 Lectures	08/18-08/31
Module 2 08/25-08/31	Cell Structure and Function, Microscopy, and Prokaryotes vs Eukaryotes	Quiz 1, Homework 1 Module 2 Lectures	08/25-08/31
Module 3 09/01-09/07	Macromolecules and Cellular Chemistry, Microbial Growth and Nutrition	Quiz 2, Homework 2 Module 2 Lectures	09/01-09/07
Module 4 **09/08-09/14**	**Exam ONE** **Module 1-3 Lectures**	**Exam ONE** **Module 1-3 Lectures**	**09/12-09/14**
Module 5 09/15-09/21	Microbial Metabolisms	Perusall 2 Module 5 Lectures	09/15-09/21
Module 6 09/22-09/28	Microbial Genetics,	Quiz 3, Homework 3 Module 6 Lectures	09/22-09/28
Module 7 09/29-10/05	Recombinant DNA, Cloning, Biotechnology	Quiz 4, Homework 4 Module 7 Lectures	09/29-10/05
Module 8 **10/06-10/12**	**Exam TWO** **Module 5-7 Lectures**	**Exam TWO** **Module 5-7 Lectures**	**10/10-10/12**
Module 9 10/13-10/19	Public Health, Principal of Diseases and Epidemiology, Infectious Diseases, Skin	Perusall 3 Quiz 5, Homework 5 Module 9 Lectures	10/13-10/19
Module 10 10/20-10/26	Respiratory and Nervous System, Infectious Diseases	Quiz 6, Homework 6 Module 10 Lectures	10/20-10/26
Module 11 10/27-11/02	Cardiovascular, GI Tract, and Urogenital Tract Infectious Diseases	Quiz 6, Homework 6 Module 11 Lectures	10/27-11/02
Module 12 **11/03-11/09**	**Exam THREE** **Modules 9-11 Lectures**	**Exam THREE** **Modules 9-11 Lectures**	**11/07-11/09**
Module 13 11/10-11/16	Immunity, Hypersensitivity, Autoimmune Diseases, and Immunodeficiency	Quiz 7, Homework 7 Module 13 Lectures	11/10-11/16
Module 14 11/17-11/23	Clinical and Diagnostic Microbiology- Identification of Infectious Diseases	Quiz 8, Homework 8 Module 14 Lectures	11/17-11/23
Thanksgiving **11/24-11/30**	Microbial Growth Control, Antimicrobial Agents, and Chemotherapeutics **Applied, Industrial, and Environmental Microbiology (Extra Credit Quizzes 1, 2)**	**Plenty Rest, Eat Healthy,** **Stay Active**	**Thanksgiving** **11/24-11/30**
Module 15 12/01-12/07	**Exam FOUR** **Modules 13-15 Lectures**	Perusall 4 Module 15 Lectures **Extra Credit Quizzes 1, 2** **Chapters 41 and 42**	12/01-12/07
Module 16 **12/08-12/10**	Course Orientation, Introduction to Microbiology, and	**Exam FOUR** **Modules 13-15 Lectures**	**12/08-12/10**

	Exploring Microbial World		

Grading Policy

Four scheduled exams are given through Canvas via Honorlock. Homework and Quizzes are through MyLab and Mastering accessed through link in Canvas.

Grading Policy-Exams

There are four (4) exams, each with 50 all T/F and multiple-choice questions. Exams are through Honorlock, accessed through link in Canvas home page. Exams cover modules lecture notes, lecture presentations and required textbook readings. Each exam covers three (3) modules.

Grading Policy-Pearson MyLab Mastering

Quizzes: There are 8 quizzes. Each quiz has 10 questions (1 point per question, total of 10 points). Questions are drawn from assigned chapter. You are allowed two attempts on each quiz. The higher score of the two attempts is recorded in Canvas.

Homework: There are 8 homework assignments. Number of questions in each homework vary, but each homework has 10 points. You have unlimited access to each homework, and the assignments are not timed.

Final Grade Distribution per Assignment Group

Assignment Group	Percent of Final Grade
Exams (4)	60%
MyLab Mastering Homework (8)	14%
MyLab Mastering Quizzes (8)	14%
Microbes in the News Perusall Discussion Activities (4)	14%
Extra Credit Quizzes (2)	3%
Grand Total	105%

Grading Scale

Grading scale (Total accumulated percentage):

A	90% and Up
A-	87.5% – 89.99%
B+	85% – 87.49%
B	80% – 84.99%
B-	78% – 79.99%
C+	76% – 77.99%
C	67.5% – 75.99%
C-	65% – 67.49%

D	55% – 64.99%
E	< 55%

A minimum grade of C is required for general education credit. A grade of C− is not a qualifying grade for major, minor, Gen Ed, or College Basic distribution credit. For further information on UF's Grading Policy. See the current UF grading policies for more information.

This course meets the General Education requirement. Primary General Education Designation: Physical and Biological Sciences (B): https://undergrad.aa.ufl.edu/general-education/gen-ed-courses/structure-of-gen-ed-courses/slos-and-performance-indicators/student-learning-outcomes/

Due Dates & Late Policy

Please be proactive and work ahead to avoid late submissions. All assignments are due at 11:59pm ET on the last day of the submission window. Due dates are strictly enforced. Assignments remain open for several days. No makeup or late work is accepted except for medical excuses granted prior to the assignment deadline. Requirements for make-up exams, and other work in this course are consistent with university policies. UF Attendance Policies

Academic Honesty

University of Florida students are bound by the Honor Pledge. 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 by abiding by the Student Honor Code.” 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 Student Conduct Code Process.

Student Privacy Disclaimer:

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows

students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without the permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student

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, https://ufl.bluera.com/ufl. 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 the GatorEvals site. Summaries of course evaluation results are available to students at GatorEvals Public Data.

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.

Services for Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodation should contact the disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Campus 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.

Health and Wellness

- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or https://umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center*: Visit https://counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit https://shcc.ufl.edu/
- *University Police Department*: Visit https://police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center*: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; visit https://ufhealth.org/locations/uf-health-shands-emergency-room-trauma-center
- *GatorWell Health Promotion Services*: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit https://gatorwell.ufsa.ufl.edu/ or call 352-273-4450.

Academic Resources

- *E-learning technical support*: Contact the UF Computing Help Desk at 352-392-4357 https://helpdesk.ufl.edu/ or via e-mail at helpdesk@ufl.edu.
- *Career Connections Center*: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- *Library Support*: Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center*: 1317 Turlington Hall, 352-392-2010. General study skills and tutoring.
- *Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- *Student Concern*: Report Student Concerns or Conduct

Additional Information

To better understand biology concepts, you must think three dimensional. You need to visualize them in a holistic way, considering the interconnectedness of different parts within a system, rather than just memorizing isolated facts; by understanding the "big picture" of how various biological components work together, it becomes easier to retain specific details and comprehend complex ideas.

Privacy and Accessibility Policies

For information about the privacy policies of the tools used in this course, see the links below:

- Honorlock
  - Honorlock Privacy Policy
  - Honorlock Accessibility
- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Microsoft
  - Microsoft Privacy Policy
  - Microsoft Accessibility
- Perusall
  - Perusall Privacy Policy
  - Perusall Accessibility
- Sonic Foundry (Mediasite Streaming Video Player)
  - Sonic Foundry Privacy Policy
  - Sonic Foundry Accessibility (PDF)
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility
- Pearson
  - Pearson Privacy Policy
  - Pearson Accessibility