

MCB6937-Special Topics in Microbiology-Spring 2023

I. General Information

MCB3020-Basic Biology of Microorganisms (Online)

Spring 2023

Department of Microbiology and Cell Sciences

Instructor

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Virtual Office Hours by Appointment Only

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Course Description

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. Fundamental concepts are discussed, followed by beneficial and harmful actions of microorganisms as they affect our lives.

Outline of topics discussed in this course:

- Explore prokaryotic cell structure, Eukaryotes vs. Prokaryotes
- Study of Physiology, Metabolism and Microbial growth
- Genetics of microorganisms, Regulation of Gene Expression 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 Recommended Curriculum Guidelines for 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

Required & Recommended Course Materials

REQUIRED TEXTBOOK: Textbook (E-BOOK) for this course is Prescott's Microbiology by Willey, Sherwood and Woolverton, 12th Edition in the form of E-book from Connect by McGraw Hill Education (**Required**). See the ISBN on UF registrar's office website. This course is included in UF ALL ACCESS Textbook program. See the link below for more details; <https://businessservices.ufl.edu/services/uf-bookstore/uf-all-access/>. Unless you opt out, as registered student in this course, you are already enrolled in All Access program. Go to UF registrar's website to redeem your access code for the eBook. Use the link provided in Canvas to access McGraw Hill Connect website. The E-book contains study aide and the required readings assigned for each exam. The e-textbook also serves as a reference that provides tutorial information, helps students prepare for the lectures, and provides supplemental materials for the lectures. Connect also provides practice exams. Students may take these exams multiple times. These exams draw questions from a pool of questions drawn for lectures and required reading materials. Most of the tables and figures used in the lectures come from this website and the e-book. Online Quizzes are also conducted via Connect as well.

CANVAS COURSE WEBSITE: The class is on E-learning (Canvas). The class syllabus, lecture presentations, study guides, and other materials will be posted on E-Learning throughout the semester. Questions about lecture material should be addressed during office hours or via email. Course details, clarifications, and Updates about the class policies will be posted online as announcements and/or emails on a regular basis. Students should check their emails and announcements on Canvas on a daily basis.

McGraw Hill Connect Website: Connect by McGraw Hill Prescott's Microbiology by Willey, Sherwood and Woolverton, 12th Edition is required for this course. See UF Registrars Office website for correct ISBN number. Access this site requires purchasing of an access code through UF All Access. Purchasing print version of the textbook does not provide access code for Connect. Course website in Canvas provides a link to Connect. This site provides complete access to textbook chapters, online quizzes, figures, tables, etc. The site also contains the required readings assigned for each exam. 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. These exams draw questions from the lectures and required reading materials. Most of the tables and figures used in the lecture notes come from this website and the e-book. Online quizzes are conducted via Connect as well.

II. Graded and Extra Credit Assignments:

EXAMS: Four scheduled exams are given through Canvas via Honorlock. Exams are conducted via Honorlock using a USB external wide-angle web camera. You must

SWITCH from built-in webcam on your computer to and external camera prior to starting your exam session. Use of External Camera is required for all exams taken via Honorlock. Exams taken without the use of external camera are not valid and the student will receive a score of ZERO (0) for that exam. Each exam contains fifty (50), all multiple-choice questions. You will have 90 minutes to complete each exam.

Use of External Side View Camera: Department of Microbiology & Cell Science requires the use of external side view wide-angle web-camera with Honorlock for ALL online assessments. All exams will be administered through Honorlock using Canvas course website. Students will use their own computers with an external camera (110° or 120° wide angle) for side-view monitoring. Unlike built-in webcams, external camera reveals the test-takers face and their work are (bench, monitor, keyboard) simultaneously. It is the student responsibility to purchase an external camera and properly set it up prior to starting each exam. See the course website in Canvas for tutorials and more details on the proper use of External Camera. Use of SCRATCH PAPERS OR ANY OTHER RESOURCES IS PROHIBITED DURING THE EXAM SESSION.

Exam materials come from lectures presentations, lecture notes, and assigned textbook readings. Study guide posted for each exam provides an excellent outline for topics covered for each exam. In some cases, information presented in class may be in contradiction with information from other sources, especially internet-posted materials. In these cases, exam questions will be based only on the information available in the textbook, lecture notes, or materials presented during the lecture presentations, and exams will be graded accordingly. Practice exams/answers available through Connect website to familiarize students with materials covered for each exam. Students should use these practice exams as real assessments of learning rather than study guides.

Requirements for class participation and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

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

Online Extra Credit Quizzes: There are EIGHT online quizzes available through McGraw Hill Connect Website. Each quiz carries 5 points and includes 10 questions. You take these quizzes online Through McGraw Hill Connect Website. Therefore, you do not need Canvas or Honorlock to submit these quizzes. See the McGraw Hill Connect course website for more details. Points from these quizzes are added to your total scores in the course. Taking Extra Credit Quizzes are considered timely class participations. They are designed to keep students engaged with the course. Therefore, Quizzes are closed after the due date and no late submission is possible. See Canvas under "QUIZZES" for date/time for each quiz. Each quiz remains open for seven (7) days. Quizzes will no longer be available in Connect after the due date. Extra Credit Quizzes cannot be made up under any circumstances.

Extra Credit Quizzes Submission Dates:

Extra Credit Quizzes	Chapter	Opening Date	Submission Date
Quiz ONE	3	01/16/2023	01/22/2023
Quiz TWO	7	01/23/2023	01/29/2023
Quiz THREE	11	02/06/2023	02/12/2023
Quiz FOUR	14	02/13/2023	02/19/2023
Quiz FIVE	14	03/06/2023	03/12/2023
Quiz SIX	17	03/20/2023	03/26/2023
Quiz SEVEN	32	04/03/2023	04/09/2023
Quiz EIGHT	34	04/10/2023	04/16/2023
Quiz Makeup	36	04/17/2023	04/23/2023

GRADING/TESTS: The final class grade is based on accumulated points. There are four (4) regularly scheduled non-cumulative exams, 100 points each (50 M/C questions). Exams are on Canvas via Honorlock. The course is based on 400 points. Points from Online Extra Credit Quizzes are considered bonus points and will be added on top of your total scores. A written (short answer) makeup exam is allowed for a missed exam due to an excused absence. Makeup exam contains short answer questions, fill-in-the blank questions, but it does not contain any multiple choice or T/F questions.

Grading scale (Total accumulated points including exams and quizzes):

A	360 – 400 points
A-	356 – 359.9 points
B+	348 – 355.9 points
B	320 – 347.9 points
B-	316 – 319.9 points
C+	308 – 315.9 points
C	280 – 307.9 points
C-	275 – 279.9 points
D	240 – 274.9 points
E	000 – 239.9 points

Attendance: Attendance is not required. There are no live, in-class sessions. Pre-Recorded Lectures are posted on MediaSite and can be accessed through a link on e-learning course site under Modules.

III. Weekly Presentations Schedule

WEEK	TOPICS
01-08	Macromolecules and Cellular Chemistry, Prokaryotes vs Eukaryotes
01-15	Cell Biology, Cell Structure and Function- Microscopy
01-22	Microbial Growth and Nutrition
EXAM ONE	Thursday-Sunday, February 02-05, 2023 (Chapters 1-5, 7)
01-29	Bacterial Metabolisms, Metabolic Pathways, Respiration and Fermentation

02-05	Bacterial Genetics, Regulation of Gene Expression
02-12	Horizontal Gene transfer (HGT) Bioinformatics, Genomics, Metagenomics
EXAM TWO	Thursday-Sunday, March 02-05, 2023 (Chapters 10-14)
02-19	Recombinant DNA Technology, Genetic Engineering, Cloning
02-26	Survey of Microorganisms, Cellular and Acellular Structures, Virology
03-05	Microbial Ecology; Applied and Environmental. Microbiology, Primary Producers
03-19	Chemotherapeutics-Antibiotics, antiviral Drugs, and other Antimicrobial Agents
Exam THREE	Thursday-Sunday March 30-April 02, 2023 (Chapters 6, 9, 16-18, 20)
03-26	Immunity, Innate (Natural) vs Acquired (Specific) Immunity, AMI and CMI
04-02	Hypersensitivity, Autoimmunity, Immunodeficiency, and Immuno-Oncology
04-09	Epidemiology, Mechanism of Pathogenicity, and Survey of Infectious Diseases
04-16	Selected Infectious Diseases- Clinical and Diagnostic Microbiology, Serology
Exam FOUR	Thursday-Sunday April 20-23, 2023 (Chapters 32-40)

IV. Student Learning Outcomes (SLOs)

Subject Area: Biological Sciences and Microbiology

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

- Student will understand and comprehend the structure, metabolism, genetics and impact of various microbes such as bacteria, viruses, fungi and parasite 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 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 parasitic 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.

V. Required Policies

Makeup Exam Policy-Requirements for class participation and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

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

-Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. 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.

-UF Evaluations Process

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/>.

-University Honesty Policy

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 honor 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://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, 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 in this class.

-Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Other UNIVERSITY SUPPORT SERVICES: Resources are available on campus for students having personal problems or lacking clear career and academic goals that interfere with their academic performance. These resources include:

- 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, 392-1161.
- Student Health Care Center, 392-1161.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

Useful Links:

- Center for Disease Control and Prevention: CDC: <http://www.CDC.gov>
- US Food and Drug Administration: FDA: <http://www.FDA.gov>
- US Environmental Protection Agency: EPA <http://www.EPA.gov>
- Microbiology and Cell Science: MCS: <http://microcell.ufl.edu>
- College of Agriculture and Life Sciences: CALS: <http://www.ifas.ufl.edu>
- University of Florida Libraries: UF Libraries: <http://www.uflib.ufl.edu>
- University of Florida: UF: <http://www.ufl.edu>

VI. End Notes:

I genuinely care about your success in this course. Please reach out to me via email, phone calls, 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.