Syllabus for Introductory Microbiology
MIBO3500 (CRN 24920) Fall 2020, MWF 10:20-11:10 am

This course is offered in a hybrid instruction format that includes a synchronous online (virtual) classroom with the option for a weekly face-to-face (in person) component, as well. The lecture/discussions are held in a synchronous virtual classroom through Top Hat; everyone is required to participate in class through Top Hat at the scheduled class time. Since the number of students in the class exceeds the social-distanced capacity of the lecture hall by ~3x, there will be an option to attend face-to-face in rm 404B/C Biological Sciences once per week (there will be a survey of the class to determine who wishes to attend class in person and then rotating subsections of the class will be assigned). Attending class face-to-face is NOT required; you may participate remotely in the synchronous virtual classroom for all class periods. We are doing our best to protect you by requiring everyone to wear masks and practicing social distancing in our classroom, but avoiding possible exposure is the best protection.

INSTRUCTOR- Dr. Anna Karls
Contact: akarls@uga.edu (use this email address, do not "reply" to emails sent from eLC); if I do not respond within 24 hrs, please resend making sure that you use the email address given here.
Office hours: Fridays after class 11:15-12:15 or by appointment (request by email: include 3 times/dates that you are available to meet and I will confirm the time/date that works with my schedule). NOTE: meetings will be held by Zoom, until further notice.

TEACHING ASSISTANTS-
Jennifer Kurasz: jennifer.kurasz25@uga.edu
Karla Shen: wangchen.shen@uga.edu
Office hours: by appointment; request by email and meetings will be held by Zoom, until further notice.

COURSE INFORMATION
LEARNING OBJECTIVES:

1. Characterize cell architecture of bacterial, archaeal and eukaryotic cells.
2. Define the essential elements of bacterial nutrition and growth.
3. Comprehend the structure, organization, and replication of microbial genomes and their evolution.
4. Understand how cellular processes and functions in prokaryotes are controlled.
5. Appreciate the diversity of viruses that use the components and resources of bacterial and eukaryotic cells to persist and produce new virions.
6. Understand the fundamentals of intermediary metabolism, carbon and energy acquisition, electron flow, and coordination of catabolic and anabolic pathways.
7. Recognize how microbial activities and the study of microorganisms impact global economies.
8. Appreciate the diversity of microorganisms and their essential roles in different environments.
9. Understand host-microbe interactions in disease and health.
10. Comprehend the innate and adaptive defenses against microbial infections and vaccine design.
11. Define the mechanisms for antimicrobial activities and the spread of antimicrobial resistance.

TEXTBOOK AND TECHNOLOGY
Textbook- required
***Microbiology, An Evolving Science,* Fourth Edition,** by Joan L. Slonczewski and John W. Foster. You may purchase a new or used book from the UGA bookstore; *OR* purchase/rent a physical

copy, new or used, from Amazon (https://www.amazon.com/Microbiology-Evolving-John-W-Foster/dp/0393614034, from ~$12); *OR* purchase an ebook version ($75 from the publisher https://digital.wwnorton.com/microbio4); *OR* purchase an electronic pdf version (multiple online sources, e.g. https://collegestudenttextbook.org/product/microbiology-an-evolving-science-4th-edition/, $20 or less). You will need the 4th edition because homework assignments are based on this edition. ALSO, there is a textbook on reserve at the library (1 day check-out) and in the Gene Michaels room (rm 327 Biological Sciences)- **Wash your hands BEFORE and AFTER using the textbook**; do NOT remove the textbook from either the library or the Gene Michaels room!

Required Technology

eLC- The UGA eLearning Commons system is an essential resource for this course. You should check it daily for course updates/news. *Recommended:* set up your eLC account to send you email/text alerts when a Course Announcement is posted, an assignment is due, etc.: (https://help.elc.uga.edu/getting-started/my-home-page/setting-up-notifications/).
Content in eLC includes the syllabus, lecture files, study aids, etc.; Toolbox will have group assignments and group discussion boards (if you want to use it for communication with your group).

Top Hat- We will be using Top Hat Pro (www.tophat.com) for the virtual classroom, class participation, lecture questions, case study in-class questions, homework, and exams. You will be able to submit answers for in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.
An email invitation to register for Top Hat will be sent to you, but if you don't receive this email, you can register by visiting our course website: https://app.tophat.com/e/421078 ; our Course Join Code is **421078.** See Top Hat Overview (https://success.tophat.com/s/article/Student-Getting-Started-with-Top-Hat) for a brief overview to get you up and running on the system.
When you register for the Top Hat Pro account, there is a subscription fee of $22 for UGA students per semester (covers all classes that are using Top Hat). If you drop this class during add/drop week, Top Hat will refund your subscription fee.
Should you require assistance with Top Hat Pro at any time please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

Not required, but may be useful: Slate- Slate is a community platform that is free when you register for Top Hat. It may be used to facilitate communication with your group members for group work in- and out-of-class and for communication with other class members. *Once you have created a Top Hat account and enrolled in our Top Hat course you should get an invitation to join Slate.* Full details on how to use Slate can be found here: https://support.tophat.com/s/article/Student-Slate.

PARTICIPATION

Participation in class requires answering questions and contributing to discussion during in-class lecture (10% of final grade). The in-class lecture/discussions are held in a synchronous virtual classroom through Top Hat at our scheduled class time; the questions are only available to answer in Top Hat during this class time. If you are having any problems with connecting during the class, immediately email both the TAs so they can help you to connect to the class. Missed participation scores (0 pts) may be dropped for up to 3 classes total, unless you have a medical excuse for missing more classes. Each of you will be assigned to subsections of the class which will be scheduled to attend face-to-face class (f2f) sessions in the lecture hall on designated days, *but attending f2f is NOT required*! *Although you need to "attend" class for lecture and case study questions, you may attend remotely even if you are scheduled for f2f.* The virtual/f2f class sessions will be recorded and posted on Top Hat and the Powerpoint files from lecture will be posted on eLC, as well.

ASSIGNMENTS AND GROUP ACTIVITIES

Reading Assignments & Homework

Reading selections and learning objectives are posted on eLC and in Top Hat for each module of the course. *IMPORTANT NOTE: The learning objectives should guide your reading and studying for exams.*

Homework (~7 total, worth 15% of your final grade) **are completed in Top Hat**. Homework questions cover selected concepts from the assigned reading material and lectures, emphasizing learning objectives; these assignments must be completed INDIVIDUALLY (do not discuss or share answers with anyone). Homework questions may be answered using notes and your textbook and you will have 2 attempts to get correct answer; answers can be submitted on Top Hat at any time until the posted deadline (submit answers as you work on the homework; you do NOT need to complete the homework at one sitting). The homework must be submitted by 10 am on the due dates, which are listed on the class schedule (see below & eLC course calendar); late submissions are NOT accepted.

Case Studies

There are ~7 case studies worth 18% of your final grade. Case studies are group work in which you will apply concepts from class to current research questions. Case studies will have an out-of-class group-work assignment that is posted on eLC ~1 week before the due date (see course schedule below and eLC calendar) AND additional case study questions on Top Hat during the class discussion on the due date. (NOTE: You are required to "attend" class for the case study discussions; you will either be attending class face-to-face OR remotely, *but communication within groups must be done online even in the classroom to observe social distancing and minimize aerosol production by talking loudly*). You will be assigned to groups of ~4 students for the semester; you may communicate with each other through the eLC group discussion board, Slate group communication, Google Docs, etc.

Group Evaluations

At the midpoint and end of the semester, each student will complete an evaluation for all of their fellow group members. If a student receives unsatisfactory evaluations, their grade from the group work will be reduced according to their level of participation in the case studies.

UNIT EXAMS, DEADLINES, REGRADES, AND EXCUSED ABSENCES

Unit Exams and Cumulative Final Exam

There are 4 Unit Exams and a cumulative Final Exam (57% of final grade). Learning objectives provided for each unit and the questions from homework, in-class questions, and case studies will guide you as to what will be on each exam.

The **Unit Exams will be taken online through Top Hat during the class period designated for each exam**; the exam can be completed in <50 minutes, but it will be open for 65 minutes (10:20 am to 11:25 pm). If you are unable to take the exam at the designated time, contact Dr. Karls immediately by email (akarls@uga.edu). The exams are open book and open notes, but you may not use the internet or ask other people for help; you need to study for the exam because questions will require a working understanding of the material, so you cannot simply lookup the answers. Do not share the contents of the exam with anyone else. *You will be asked to sign a statement that your work complies with the UGA Academic Honesty Policy and the stated rules and restrictions for the exam.*

If you miss an exam due to documented severe illness (*doctor's note must state period of illness includes the day of the exam and I do check with the physician's office to confirm*) or have another University-sanctioned excuse, you may arrange to take a makeup exam in person (not online); OR you may replace the missed exam grade with your Final Exam grade.

The **cumulative Final Exam** is optional; if you are satisfied with your course grade based on the unit exams and other components of the course grade (case studies, homework, in-class questions, etc.), then you do not need to take the Final Exam. If you take the Final Exam and earn a higher grade than

your lowest unit exam grade, then the Final Exam grade will replace your lowest unit exam grade. *IMPORTANT: Unexcused missed exams will result in a zero but will NOT be replaced by the final exam grade. So, do not simply skip taking an exam because you think the zero will be replaced! Email Dr. Karls immediately if you miss taking an exam or have problems when taking the exam online.*

Deadlines

All due dates and times are final – case studies, homework, or exams turned in after due date/time will be scored a zero, unless you have been given permission for a delayed submission.

Regrades

Request for a regrade of an exam, quiz, or case study must be submitted within 3 DAYS after grade posting. To request a regrade, submit on eLC (Regrade folder in the Assignments Tool) a Word or PDF document that gives the question number and the answer with supporting evidence from textbook or lecture notes that proves the answer is correct. Be sure to include the Exam # and your name in the file name.

Excused Absences

University policy on excused absences: https://provost.uga.edu/policies/academic-affairs-policy-manual/4-06-class-attendance/. A medical excuse must include documentation from a medical facility that indicates you could not take the exam on the date in question.

LETTER GRADE ASSIGNMENT

Participation/lecture questions- averaged for 10% of final grade
Homework- averaged for 15% of final grade
Case studies- averaged for 18% of final grade
Unit exams and Final Exam- 4 are averaged for 57% of final grade; lowest exam score is dropped*
**unexcused missed exam is not dropped, see exams section of syllabus*.

Grade Scale:

A 100-93, A- 92-90, B+ 89-87, B 86-83, B- 82-80, C+ 79-77, C 76-73, C- 72-70, D+ 69-67, D 66-63, D- 62-60, F <60. Note: grades ending in >.5 round up to the next whole number, e.g. 92.6 rounds to 93, but 92.5 counts as 92.

IMPORTANT INFORMATION REGARDING CONDUCT IN COURSE

ACADEMIC HONESTY: All work is individual, i.e. without assistance from anyone, unless otherwise indicated. All academic work must meet the standards contained in "A Culture of Honesty" (http://www.uga.edu/honesty). Students are responsible for informing themselves about those standards before performing any academic work. Acts of dishonesty, such as plagiarism, unauthorized assistance, lying/tampering, and theft (of ideas, materials, etc.), will NOT be tolerated and will be reported immediately to the Office of Academic Honesty. Questions related to course assignments and the academic honesty policy should be directed to the instructor. The link to more detailed information about academic honesty can be found at: https://honesty.uga.edu/Academic-Honesty-Policy/Procedures_for_Resolving_Matters_of_Alleged_Academic_Dishonesty/

UGA CODE OF CONDUCT: Your behavior in this class should reflect the **UGA Code of Conduct**; this includes treating your group partners and classmates with respect in your communications on eLC and in class, and fulfilling your responsibilities in group/class projects.
http://conduct.uga.edu/students/rights.html

MENTAL HEALTH AND WELLNESS RESOURCES:

• If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit https://sco.uga.edu/. They will

help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
• UGA has several resources for a student seeking mental health services (https://www.uhs.uga.edu/bewelluga/bewelluga) or crisis support (https://www.uhs.uga.edu/info/emergencies).
• If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (https://www.uhs.uga.edu/bewelluga/bewelluga) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
• Additional resources can be accessed through the UGA App.

CORONAVIRUS INFORMATION FOR STUDENTS

Face Coverings:

Effective July 15, 2020, the University of Georgia—along with all University System of Georgia (USG) institutions—requires all faculty, staff, students and visitors to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. Face covering use is in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Students seeking an accommodation related to face coverings should contact Disability Services at https://drc.uga.edu/.

DawgCheck:

Please perform a quick symptom check each weekday on DawgCheck—on the UGA app or website—whether you feel sick or not. It will help health providers monitor the health situation on campus: https://dawgcheck.uga.edu/

What do I do if I have symptoms?

Students showing symptoms should self-isolate and schedule an appointment with the University Health Center by calling 706-542-1162 (Monday-Friday, 8 a.m.-5 p.m.). Please DO NOT walk-in. For emergencies and after-hours care, see https://www.uhs.uga.edu/info/emergencies.

What do I do if I am notified that I have been exposed?

Students who learn they have been directly exposed to COVID-19 but are not showing symptoms should self-quarantine for 14 days consistent with Department of Public Health (DPH) and Centers for Disease Control and Prevention (CDC) guidelines. Please correspond with your instructor via email, with a cc: to Student Care & Outreach at sco@uga.edu, to coordinate continuing your coursework while self-quarantined. If you develop symptoms, you should contact the University Health Center to make an appointment to be tested. You should continue to monitor your symptoms daily on DawgCheck.

How do I get a test?

Students who are demonstrating symptoms of COVID-19 should call the University Health Center. UHC is offering testing by appointment for students; appointments may be booked by calling 706-542-1162.
UGA will also be recruiting asymptomatic students to participate in surveillance tests. Students living in residence halls, Greek housing and off-campus apartment complexes are encouraged to participate.

What do I do if I test positive?

Any student with a positive COVID-19 test is **required** to report the test in DawgCheck and should self-isolate immediately. Students should not attend classes in-person until the isolation period is completed. Once you report the positive test through DawgCheck, UGA Student Care and Outreach will follow up with you.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Course Schedule:

Day	Date	Topic	Assignment Due	Text Readings
		Unit 1: The Microbial Cell		
F	8/21	COVID-19- Virology, Epidemiology, Clinical Features, Therapy and Vaccines.		
M	8/24	Introduction		Ch. 1
W	8/26	Microscopy		Ch. 2
F	8/28	Microscopy		Ch. 2
M	8/31	Cs. Study 1; Bacterial Cell Structure & Function	**Case Study 1 due by 10 am**	Ch. 3
W	9/2	Bacterial Cell Structure & Function		Ch. 3
F	9/4	Bacterial Growth & Development	**Homework 1 due by 10 am**	Ch. 4
M	***9/7***	***UGA Holiday for Labor Day***		
W	9/9	Bacterial Growth & Development		Ch. 4
F	9/11	Cs. Study 2; Control of Microbial Growth	**Case Study 2 due 10 am**	Ch. 5
M	9/14	Control of Microbial Growth		Ch. 5
W	9/16	Control of Microbial Growth; Review	**Homework 2 due by 10 am**	Ch. 5
F	***9/18***	***Exam 1***		
		Unit 2: Microbial Genetics		
M	9/21	Genomes & Chromosomes		Ch. 7
W	9/23	Genomes & Chromosomes		Ch. 7
F	9/25	Transcription, Translation, & Bioinformatics		Ch. 8
M	9/28	Transcription, Translation, & Bioinformatics; Cs. Study 3	**Case Study 3 due by 10 am**	Ch. 8
W	9/30	Molecular Regulation		Ch. 10
F	10/2	Molecular Regulation	**Homework 3 due by 10 am**	Ch. 10
M	10/5	Molecular Regulation; Gene Transfer, Mutation, Genome Evolution		Ch. 9
W	10/7	Gene Transfer, Mutation, Genome Evolution		Ch. 9
F	10/9	Gene Transfer, Mutation, Genome Evolution	**Homework 4 due by 10 am**	Ch. 9
M	10/12	Case Study 4; Review	**Case Study 4 due by 10 am**	
W	***10/14***	***Exam 2***		
		Unit 3: Viruses, Immune System, Microbial Pathogenesis, Antimicrobials & Epidemiology		
F	10/16	Viruses and Viral Molecular Biology		Ch. 6, 11
M	10/19	Viruses and Viral Molecular Biology		Ch. 6, 11
W	10/21	Viruses and Viral Molecular Biology		Ch. 6, 11
F	10/23	Human Microbiome	**Case Study 5 due by 10 am**	Ch. 23
M	10/26	Innate Immunity		Ch. 23
W	10/28	Innate Immunity & Adaptive Immunity	**Homework 5 due by 10 am**	Ch. 23, 24

F	***10/30***	***Fall Break***		
M	11/2	Adaptive Immunity		Ch. 24
W	11/4	Adaptive Immunity &Vaccines		Ch. 24
F	*11/6*	Microbial Pathogenesis & Disease		Ch. 25, 26
M	11/9	Microbial Disease & Epidemiology; Cs Study 6	**Case Study 6 due by 10 am**	Ch. 26, 28
W	11/11	Antimicrobials & Antimicrobial Resistance		Ch. 27
F	11/13	Antimicrobial Resistance; Review	**Homework 6 due by 10 am**	Ch. 27
M	***11/16***	***Exam 3***		
		Unit 4: Microbial Metabolic Diversity & Ecology		
W	11/18	Energetics & Catabolism		Ch. 13
F	11/20	Energetics & Catabolism		Ch. 13
M	11/23	Electron Flow in Organotrophy, Lithotrophy, & Phototrophy	**Homework 7 due by 10 am**	Ch. 14
W	***11/25***	***Thanksgiving Break (11/25-11-27)***		
F	***11/27***	***Thanksgiving Break (11/25-11/27)***		
M	11/30	Biosynthesis		Ch. 15
W	12/2	Food and Industrial Microbiology		Ch. 16
F	12/4	Microbial Ecology; Cs Study 7	**Case Study 7 due by 10 am**	Ch. 21
M	12/7	Microbes in Global Elemental Cycles; Review		Ch. 22
T	***12/8***	***Exam 4***		
W	12/9	Wild card lecture; Review for Final Exam		
W	***12/16***	***Cumulative Final Exam 8-11 am***		