

## MCB 100 – Introductory Microbiology – SPRING 2024

**Course Rubric:** MCB 100 (3 credit hour, CRN#38678)

**Course Meeting Time:** Lectures for MCB 100 will be held MWF at 2:00-2:50 pm

**Course Location:** 2079 Natural History Building

### Course Directors:

<p><b>Brenda A. Wilson, PhD</b> Professor, Department of Microbiology <b>URL:</b> <a href="http://mcb.illinois.edu/faculty/profile/wilson7">http://mcb.illinois.edu/faculty/profile/wilson7</a> <b>Office:</b> B209 Chem Life Sci Lab (CLSL) <b>Email:</b> <a href="mailto:wilson7@illinois.edu">wilson7@illinois.edu</a> <b>Office Hours:</b> Tuesdays, 12:00-12:50 pm, via Zoom, or by appointment - email set up a meeting.</p>	<p><b>Jana N. Radin, PhD</b> Research Scientist, Department of Microbiology <b>URL:</b> <a href="https://mcb.illinois.edu/directory/profile/jnradin">https://mcb.illinois.edu/directory/profile/jnradin</a> <b>Office:</b> B103 Chem Life Sci Lab <b>Email:</b> <a href="mailto:jnradin@illinois.edu">jnradin@illinois.edu</a> <b>Office Hours:</b> Tuesdays, 12:00-12:50 pm, via Zoom, or by appointment - email to set up a meeting.</p>
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**Course TA:** Mr. Nic Handy ([nhandy2@illinois.edu](mailto:nhandy2@illinois.edu)) will be assisting with grading and course logistics and will be available for office hours (Mondays, Wednesdays, Thursdays, and Fridays, 9:00-10:00 am) in person at the MCB Learning Center (101 Burrill Hall) or via Zoom by appointment - email Nic to ask questions or setup a Zoom session or meeting. Nic will be the point person for handling all issues with Moodle, Mastering, and iClickers. Nic offers tutoring sessions during his office hours (email to make arrangement).

**Course Coordinator:** Mr. Nick Kirchner ([kirchner@illinois.edu](mailto:kirchner@illinois.edu)) will be assisting with DRES accommodations, exam logistics, conflicts, registration, and other course logistics. Email to ask questions or setup a Zoom meeting.

### Course Description:

*Introductory Microbiology (MCB 100)* is designed to introduce students to the fascinating field of microbiology, where students will explore the invisible world of microbes, including bacteria, fungi, and parasites, and viruses. Students will learn about the properties and activities of microbes and why they matter to life on earth, including consideration of their important roles in natural processes, such as photosynthesis, ecology, nutrition, and health and disease. Students will gain foundational knowledge of microbial biology ranging from basic structural and cellular function and methods of experimental study to the use and control of microbes in industrial fermentations, in agriculture and biotechnology, in sanitation and environmental remediation, and in health promotion and disease prevention. Students will gain foundational knowledge of microbial biology ranging from basic structural and cellular function and methods of experimental study to the use and control of microbes in industrial fermentations, in agriculture and biotechnology, in sanitation and environmental remediation, and in health promotion and disease prevention. Student will attain a thorough working knowledge of foundational microbiological concepts, how to think critically and evaluate science-related news and information, and how to apply predictive models to microbiology-related phenomena.

*Introductory Microbiology (MCB 100)* is a general education course offered by the Molecular and Cellular Biology instructional program that satisfies the General Education Criteria for Nat Sci & Tech – Life Sciences and serves non-MCB majors, such as Animal Science, Food Science, Pharmacy, Kinesiology, Engineering, Community Health, Chemistry, Psychology, etc. Since MCB 100 fulfills the general education requirements for Life Sciences, students also gain a solid understanding of scientific literacy and the process of scientific inquiry, how to communicate complex scientific information, how to work collaboratively, and how paradigms of microbiology relate to society, policy, and their own lives.

## Course Learning Objectives:

After taking this course, students will be able to:

1. Describe the components of scientific literacy and the process of scientific inquiry.
2. Summarize and explain complex scientific information.
3. Apply simple predictive models to microbiology-related phenomena.
4. Demonstrate how paradigms of microbiology relate to society and policy and their own lives.
5. Critically evaluate science-related news and information for their credibility and validity.
6. Apply critical thinking and reasoning skills to solve problems related to microbiology.
7. Synthesize a general working knowledge of fundamental biological concepts relevant to microbiology.
8. Recognize that microbiology is a dynamic, collaborative, and inter-disciplinary field.

## COURSE TEXTBOOK, WEBSITE, AND MASTERING BIOLOGY MANAGEMENT TOOL

The textbook for this course is *Microbiology: with Diseases by Taxonomy* by Robert W. Bauman, 6<sup>th</sup> Edition, Pearson Education, Inc., 2020.

The eText comes with an online Modified Mastering Microbiology Course Management Tool, which is accessed through the Moodle course website and purchased there from the publisher: Pearson Education. (*Note:* Do not purchase the eText or Mastering directly from the publisher – It needs to be synced with the Moodle course site.) Directions on how to access the website (at URL: <https://learn.illinois.edu>) and setup a username and password can be found on the Moodle course website in under the “Announcements” tab. Hardcopy versions of the textbook are available for purchase through the bookstore, publisher or Amazon, but the eText is required for course assignments and homework.

## READING ASSIGNMENTS AND STUDY AIDS

For each lecture topic, students are expected to prepare by reading the assigned chapters in the textbook and exploring the available study materials and tutorials available through the Mastering site. You can use the “Study Area” in Mastering Microbiology to ensure you understand the material by practicing with additional questions posted for each of the reading assignments.

**NOTE:** There will be homework in Mastering that is based on the assigned reading.

## LECTURE PRESENTATION SLIDES AND VIDEO RECORDINGS

Lecture slide presentations and video pre-recordings will be made available for download from the Moodle site. The associated lecture discussion will be held during the normal class time on MWF at 2:00 pm. During this discussion period, we will be reviewing key points regarding the material, practicing, and assessing student grasp of concepts through iClicker questions and activities, and students are welcome to ask questions regarding the lecture content and to discussion related topics with the instructors. **Students are expected to watch the pre-recorded lecture videos ahead of time.**

## Lecture-Specific Activities – Practice Questions for Each Lecture

**No credit – these are for practice.** Each class session will have a set of Lecture-specific questions or activities to assist with learning the material covered in class. For these assignments, there may be multiple-choice questions, fill-in-the blank questions, free-response questions, or read-and-

interpret questions. These will not count towards the course grade, but we strongly encourage students to use these exercises for learning the material and practicing for the exams.

## **COURSE ASSESSMENTS**

The course assessments are centered around the lecture material, which includes reading assignments, lecture slides and notes, class discussion and activities, homework assignments, team-based projects, and examinations.

### **GRADING:**

#### **1,000 points total – 39 lectures**

400 pts – 4 exams (100 pts each)

240 pts – 18 homeworks (16 homeworks + 1 Tutorial + 1 Activity), 15 pts each – top 16 scores used

160 pts – 38 iClickers (38 iClicker sessions), 5 pts each – top 32 scores used

200 pts – 2 x 4-membered team poster projects (100 pts each), scores based on:

- 20 pts – Part A – executive summary – score assessment by TA and instructors
- 20 pts – Part B – team-designed poster – score assessment by TA and instructors
- 60 pts – Part C – peer-evaluation of executive summary and poster/brochure
  - 25 pts – score based on evaluations from other students
  - 25 pts – score based on evaluation of other teams' travel advisories (each student must evaluate other team's information material)
  - 10 pts – score based on self-evaluation of team members and self

#### **Grade Cutoffs: (out of 1,000 total points – these are absolute, there is no curving of grades)**

A+ – 980  
A – 930  
A- – 880  
B+ – 830  
B – 780  
B- – 730  
C+ – 680  
C – 630  
C- – 580  
D+ – 530  
D – 480  
D- – 430  
F – <430

### **ACADEMIC INTEGRITY:**

As UIUC students, everyone in this course is expected to be completely familiar with the UIUC Student Code, Article 1. Part 4. Academic Integrity (sections 401-406). Cheating will NOT be tolerated in this course. Any student found cheating could face receiving a failing "F" grade for the course and recommendation for suspension or dismissal from the University.

## MASTERING ASSIGNMENTS

### Homework Assignments (Individual through Mastering Microbiology)

**240 points – 15 pts each (18 Homework Assignments, top 16 scores used)**

For the first Homework Assignment (HW#1), students will be exploring the Mastering Microbiology website using a Tutorial designed to help learn how to navigate the system.

For the second Homework Assignment (HW#2), students will be completing an activity on the scientific method and scientific inquiry using the Moodle site (not Mastering Microbiology) to familiarize them with the Moodle site for uploading material.

For the remaining Homework Assignments (HW#3-#18), there will be an online quiz in Mastering Microbiology based on the assigned reading and tutorials and lecture notes (but primarily the reading assignment) for each of the topics covered in class, according to the course schedule. Once entering the quiz, the quiz will be open for 2 hours. Two attempts are allowed, with the average of the scores taken. *Note: There may be a delay for syncing of the Mastering scores with the Moodle gradebook.* After the quiz has closed, students who have completed the quiz will have access to the quiz for practice and a link to look up relevant sections of the eBook for study.

### In-class iClicker Quizzes (Individual through iClicker Mobile App)

**160 points – 5 pts each session (38 iClicker sessions, top 32 scores used)**

For each lecture, students are expected to use their iClicker mobile apps (register and download the app onto your mobile phone or laptop) to respond to 5 questions (5 pts total) that will be posted in class. You can directly enter the iClicker site for this course at URL: <https://join.iclicker.com/VSBA>.

**The questions will cover key concepts from the lecture material; hence students are expected to have reviewed the pre-recorded lectures ahead of time.** For each question, 0.5 pt will be given for responding and an additional 0.5 pt will be given for a correct response. Even if your response is not correct, you will receive partial credit for responding. **You must be present in class to receive credit. If you have trouble with the app during lecture, write down your responses and give/send them to the TA by the end of class (late submissions are not accepted).**

## TEAM PROJECT ASSIGNMENTS (AS 4-MEMBERED TEAM)

**200 points total (100 points each) – upload through the Moodle site**

For these team assignments, you will work as a 4-membered team, and your 4-membered team will propose and design an informational flyer (Assignment #1) or a travel advisory poster (Assignment #2). There will be three parts to this assignment. For the first two parts, you will work as a four-membered team to generate the executive summary (Part A) and poster (Part B). In the last part (Part C), you will participate as an individual in peer-evaluation of the team-generated posters. Specific details of these assignments are attached below and will be posted on the Moodle site.

200 pts – 2 x 4-member team poster/pamphlet projects (100 pts each), scores based on:

- 20 pts – Part A – executive summary – grade assessment from TA and instructor
- 20 pts – Part B – team-designed poster – grade assessment from TA and instructor
- 60 pts – Part C – peer-evaluation of executive summary and poster/brochure
  - 25 pts based on evaluations of your information material by other students
  - 25 pts based on your evaluation of other teams' material (each student must evaluate other teams' information material)
  - 10 pts based on self-evaluation of your team and self

## EXAMS

### 400 points total – 100 pts each

There will be 4 exams, 2 during the first half of the course and 2 during the second half of the course (the 4<sup>th</sup> exam will be held during the final exam period). The exams are not cumulative, emphasizing material covered during the previous period. *However*, this does not mean that you can completely forget about the previous material from earlier in the course since later material builds on the earlier material. For each exam, the questions will emphasize material that was covered in the assigned readings (textbook and tutorials), assigned homework, in-class activities, and lecture notes.

**Conflicts:** If you know you have a conflict with an exam, you will need to fill out the CONFLICT FORM on the Moodle site as soon as possible. See the posted rules associated with requesting and obtaining approval for a conflict exam.

**Challenging a Grade:** To challenge a grade, you must submit a REGRADE REQUEST form through the Moodle site no later than 1 week after the scores are posted. You must specifically state which questions or components you want regraded and why. Except for simple score calculation errors, we will *NOT* re-grade anything that does not have a written explanation/request with justification attached to it. After one week, *NO* changes to grades will be made!

### Honors Credit

Those of you who are in the Chancellor's Scholars, James Scholars, MCB Honors, or other honors programs and are interested in earning Honors Credit for MCB100 may do so by completing the Honors assignment posted on the Moodle site by 11:59 pm on the last day of classes.

**Note:** Honors credit is only given to those students who earn at least a "B" grade in the course.

### Extra Credit

To encourage feedback on our course so that we may improve it for future iterations, we offer 10 pts extra credit for providing evidence that the student has submitted ICES evaluations for both instructors. Once you have submitted your ICES evaluations, take a screenshot of the webpage that shows you have completed your ICES for the course and submit it to the Moodle course site.

## TASKS-AT-GLANCE:

Here is what you must do for each lecture:

1. Read the assigned chapter in the eTextbook in Mastering Microbiology (posted in the course Schedule and on the Mastering Microbiology calendar).
2. Listen to the pre-recorded lecture video under the “Online Lecture Material” tab in Moodle. Most students find that using 1.5x audio speed works well. There is an accompanying pdf of the lecture slides also available under the “Lecture Slide Presentations” tab in Moodle.
3. Attend all lecture discussion sessions (MWF at 2:00-2:50 pm). There will be in-class iClicker questions (worth up to 5 pts) for each session to provide feedback on learning progress. Bring questions to the session for discussion.
4. Complete the practice lecture-specific activity to help learn the material. We recommend that you complete this before completing the homework assignment to keep up with the material and to aid with preparing for the homework and exam.
5. Complete the associated Homework Assignment – due as listed in the course schedule (posted on Moodle page) and in the Mastering calendar.

**NOTE:** There will also be 2 team-based projects to complete before the end of the semester.

1. **DO NOT WAIT** until the last day to contact your team members and organize the tasks.
2. Please follow the course schedule for due dates for each part.
3. These projects provide application of the concepts learned in the course and provide a general overview of different types of microbes.
4. Teamwork is a critical component of these assignments that help build science communication skills and collaborative experience.

## TIPS FOR SUCCESS:

You will do well in this course if you keep up to date with the material! This means that you will need to spend time studying every day!

Take good notes during class lecture and review them later. Review iClicker and Study questions.

Read and study the assigned material before the lecture. This makes the learning process much more efficient, and it also helps with getting the most out of discussions.

The later parts of the course will require that you understand and remember material learned in earlier parts of the course, even though the emphasis will be on the newer material.

You will NOT success in this course by memorization alone. To do well in this course, you must participate in active research individually and in a group, and you will have to understand concepts, integrate facts and concepts, and make extrapolations.

If you are having difficulty with this course, *DO NOT WAIT* to seek out help. Make use of available resources! And that includes us! Both instructors will be available for discussions during class and during office hours, where any question will be answered or any topic that is not clear will be discussed. You can also get help from your TA during office hours.

Use the “study area” in Mastering Microbiology to ensure you understand the material by practicing with additional questions. Practice by doing the Lecture-specific questions.

The key to successful learning is multiple fully engaged exposures to the material. Participating in study groups or class forums is also helpful.

#### 4-Membered Team Project Assignment #1 (100 pts – submit through the Moodle site)

**Scenario:** Your team is called in as microbiological expert consultants for a large, multi-million-dollar corporation that is interested in using microbes as bioreactors to produce certain biological products instead of synthetic compounds that result in chemical waste byproducts or to facilitate existing industrial processes. However, the board of trustees of this corporation is not convinced that this is an environmentally safe or beneficial approach. According to the chairperson of the board: “After all, microbes are associated with disease and have few beneficial applications that would make this a viable alternative.” To convince the board of trustees that microbes could, indeed, have beneficial properties, the head of the corporation’s development department has asked your team to provide examples of beneficial uses of microbes in industry, agriculture, environment, ecology, or medicine.

A list of potential microbes that could serve as suitable examples are:

(1) <i>Acetobacter aceti</i>	(2) <i>Acetobacter tropicalis</i>
(3) <i>Arthrobacter nicotianae</i>	(4) <i>Aspergillus flavus</i>
(5) <i>Aspergillus oryzae</i>	(6) <i>Azoarcus tolulyticus</i>
(7) <i>Azotobacter chroococcum</i>	(8) <i>Bacillus coagulans</i>
(9) <i>Bacillus thuringensis</i>	(10) <i>Baculovirus</i>
(11) <i>Beauveria bassiana</i>	(12) <i>Bifidobacterium animalis</i>
(13) <i>Bifidobacterium longum</i>	(14) <i>Bradyrhizobium japonicum</i>
(15) <i>Brevibacterium linens</i>	(16) <i>Brome mosaic virus</i>
(17) <i>Ustilago maydis</i>	(18) <i>Caulobacter crescentus</i>
(19) <i>Cladosporium sphaerospermum</i>	(20) <i>Clostridium acetobutylicum</i>
(21) <i>Comamonas testosteroni</i>	(22) <i>Corynebacterium aquaticum</i>
(23) <i>Corynebacterium glutamicum</i>	(24) <i>Streptomyces cattleya</i>
(25) <i>Cupriavidus necator</i>	(26) <i>Curvularia protuberata</i>
(27) <i>Cyanobacteria</i>	(28) <i>Ervinia dissolvens</i>
(29) <i>Gluconobacter oxydans</i>	(30) <i>Halomonas elongata</i>
(31) <i>Kineococcus radiotolerans</i>	(32) <i>Lactobacillus acetotolerans</i>
(33) <i>Lactobacillus acidophilus</i>	(34) <i>Lactobacillus bulgaricus</i>
(35) <i>Lactobacillus salivarius</i>	(36) <i>Lactobacillus licheniformis</i>
(37) <i>Lactobacillus reuteri</i>	(38) <i>Lactobacillus rhamnosus</i>
(39) <i>Leuconostoc citrovorum</i>	(40) <i>Leuconostoc mesenteroides</i>
(41) <i>Marinobacter algicola</i>	(42) <i>Methanosarcina barkeri</i>
(43) <i>Microviridae</i>	(44) <i>Monascus purpureus</i>
(45) <i>Mycococcus xanthus</i>	(46) <i>Mycorrhizae</i>
(47) <i>Nitrosomonas europaea</i>	(48) <i>Paucimonas lemoignei</i>
(49) <i>Pedicoccus cervisiae</i>	(50) <i>Penicillium camemberti</i>
(51) <i>Penicillium chrysogenum</i>	(52) <i>Penicillium glaucum</i>
(53) <i>Penicillium notatum</i>	(54) <i>Penicillium roqueforti</i>
(55) <i>Polydnviridae</i>	(56) <i>Pseudomonas aeruginosa</i>
(57) <i>Pseudomonas syringae</i>	(58) <i>Ralstonia pickettii</i>
(59) <i>Rhizobium leguminosarum</i>	(60) <i>Saccharomyces carlsberhensis</i>
(61) <i>Saccharomyces cerevisiae</i>	(62) <i>Spirulina</i>
(63) <i>Lactococcus lactis</i>	(64) <i>Streptococcus thermophilus</i>
(65) <i>Streptomyces species</i>	(66) <i>Synechococcus</i>
(67) <i>Thermus aquaticus</i>	(68) <i>Thiobacillus thiooxidans</i>
(69) <i>Trichoderma polysporum</i>	(70) <i>Trichonympha agilis</i>
(71) <i>Tuber melanosporum</i>	(72) <i>Tulip breaking virus</i>
(73) <i>Candida milleri</i>	(74) <i>Wangiella dermatitidis</i>
(75) <i>Wolbachia pipientis</i>	(76) <i>Xenorhabdus nematophilus</i>

## Team Selection – due by 11:59 pm on January 26

### Part A: (20 points) – due by 11:59 pm on February 16

Your team is asked to **choose one of the microbes listed above** (first sign-up, first choice – your group number is the number of the microbe listed) and to prepare an **executive summary report** (~1000 words) that you will submit to the corporation's leadership. To assist in preparing the report, you may use the Internet, scientific journal articles, and other information databases (such as PubMed), to research information about the microbe that you have chosen for your report. Be sure to cite your sources (journal article PMID, official government, scientific society, or organization website URL, etc.) – but not a textbook, blog, personal website, or lecture-notes! Your citations and references may be listed on a separate page and do not count toward the word limit.

#### Grading Rubric - For your report address the following points:

- (1) Identify the microbe or virus that you have chosen and describe what kind of microbe it is (bacterium, fungus, parasite, virus) and its phylogenetic classification, where its normal niche/habitat is, and some of its key physical (morphology, size, shape) and metabolic properties. (6 pts)
- (2) Based on your research, describe briefly how this microbe can be beneficial. Provide all known uses or applications that it currently has or could have. (4 pts)
- (3) Provide a brief history of how this microbe was developed to be applied or used for beneficial purposes. (4 pts)
- (4) Develop **three** questions or concerns (and your answers to them) that you anticipate that the leadership in the corporation will ask you regarding possible applications of this microbe. Provide the rationale behind each of your questions and answers. (6 pts)

**NOTE:** Submit your report as a **pdf file** to the website (use the file extension \*.pdf). Only one person from the group needs to submit (make sure everyone's name is on the report), but ALL members of the group must click the submit button before the assignment will be considered submitted. *Do NOT* wait until the evening it is due to put everything together and submit – not everyone on your team may be available late in the evening.

**NOTE:** Do NOT wait until the last few days before the deadline to attempt to contact your teammates and complete the assignments. If you are having trouble contacting your teammates, please let us know asap, and we will try to help.

### Part B: (20 points) – due by 11:59 pm on February 26

**NOTE: This is a HARD deadline! If your team does not submit by this deadline, you will receive a score of 0!**

Your team is asked to compile the information gathered in Part A to design an informational poster or infographic that the corporation's leadership could have as a handy quick-facts sheet. For example, you may choose to use powerpoint (in poster mode), word, or an infographic/pictochart application, such as that available at URL: <https://piktochart.com>. Note: This should not be a multipage slide deck! A popular way that many folks present their ideas to higher ups in companies or to funding agencies is to present them in the form of a quad chart. Powerpoint has a feature where you can make a poster in it as a single slide. See: <https://designshack.net/articles/business-articles/how-to-make-a-poster-in-powerpoint/>. If you use images that are not yours, be sure to cite your sources. You may list them on a separate page.

Grading Rubric: 5 pts for completeness and quality of content, 5 pts for creativity, quality, and effort of visual appearance, 5 pts for accuracy and completeness of information and reference sources, 5



pts for effectiveness to inform and educate the public and corporation leadership about the beneficial uses or applications of your microbe.

**NOTE:** Submit your material as **pdf files** to the website. If you submit the visual part as a URL, picture or other media format, you need to use the appropriate link function in the menu. If you need assistance with this, see your TA during office hours or make arrangements to meet.

### **Part C: (60 points)**

– submit Parts A and B to Part C by 11:59 pm on March 1

**NOTE: This is a HARD deadline! If you do not submit by this deadline, you will receive a score of 0!**

**NOTE: MAKE SURE YOU SUBMIT BOTH PARTS A AND B TO PART C in pdf format. Double-check your submission to make sure that you have submitted the correct documents.**

– complete Part C by 11:59 pm on March 18

**NOTE: This is a HARD deadline! If you do not submit by this deadline, you will receive a score of 0!**

**NOTE:** For this assignment, each individual member of the team will need to submit both parts A and B to part C.

In this part, you will participate in peer-evaluating the executive summaries plus posters or infographs that were generated by each of the teams. Specifically, you will evaluate the summaries and posters or infographs of other assigned teams (25 points) and others will be assigned to evaluate your team's information material (25 points). A scoring rubric will be provided on Moodle.

*NOTE: If your assessment scores for other projects deviate by more than 2 points from that of the instructor's assessment score without valid justification, then your own assessment will be impacted.*

To ensure fair assessment, each student will evaluate a minimum of 5 other team projects. If the program assigns you two projects that are from students that are on the same team, please let us know ASAP, so that we can reassign another different one.

You will also be asked to self-evaluate your own performance and that of your teammates regarding contributions and efforts for the team project (10 points). If you feel that not all your team members contributed equally to this assignment (part A or part B or both), then it is your responsibility to contact your instructors to explain the situation, and we will try to help sort the matter (do this sooner rather than later). Nevertheless, you will also submit a self-assessment of each member of your team (including you) regarding: (1) % participation/effort, and (2) score of 1-5 for quality of each person's contribution. If there is a significant issue, then we will investigate the matter further.

**Note:** Teamwork is an important component of this assignment! If you are having trouble with any team member(s), please let us know and we will try to help.

#### 4-Membered Team Project Assignment #2 (100 pts – submit through the Moodle site)

**Scenario:** Your team is called in as infectious disease expert consultants for a large, multi-million-dollar corporation that sends representatives to all parts of the world to gather information and statistics about potential markets. You have been assigned the responsibility of updating the corporation's leadership on what should be done for its representatives who will be sent to these regions to protect them from potential health hazards. The CDC regularly posts notices to inform travelers and clinicians about current health situations related to specific destinations. These issues may arise from disease outbreaks that may affect travelers' health. The CDC has issued previous or current Alerts for the following infectious diseases:

(1) African tick-bite fever	(2) African trypanosomiasis (African sleeping sickness)
(3) Anthrax	(4) Aspergillosis
(5) Avian flu	(6) Bovine spongiform encephalopathy
(7) Brucellosis	(8) Bubonic Plague
(9) Buruli ulcer disease	(10) Chagas disease
(11) Chikungunya	(12) Ehrlichiosis
(13) Cholera	(14) <i>Clostridium difficile</i>
(15) Dengue	(16) Diphtheria
(17) <i>Diplyidium</i>	(18) <i>E. coli</i> O157:H7
(19) Ebola	(20) Giardiasis
(21) Gonorrhea	(22) H7N9 Avian Flu
(23) Hand, foot and mouth disease	(24) Hantavirus pulmonary syndrome
(25) Hepatitis A	(26) Hepatitis B
(27) Hepatitis C	(28) Hepatitis E
(29) Histoplasmosis	(30) HIV
(31) Leishmaniasis	(32) Leptospirosis
(33) Lyme disease	(34) Malaria
(35) Measles (Note: not Rubella)	(36) Meningococcal disease
(37) Middle East respiratory syndrome (MERS)	(38) Methicillin-resistant <i>Staphylococcus aureus</i>
(39) Monkeypox	(40) Mumps
(41) Pasteurellosis	(42) Pertussis (whooping cough)
(43) Polio	(44) Rabies
(45) Rat-bite fever	(46) Rocky Mountain spotted fever
(47) Ross River virus disease	(48) Scabies
(49) Schistosomiasis	(50) Tetanus
(51) Tick-borne encephalitis	(52) <i>Tinea</i>
(53) Toxocariasis	(54) Trichomoniasis
(55) Tuberculosis	(56) Tularemia
(57) Typhoid fever	(58) <i>Vibrio vulnificus</i>
(59) West Nile virus	(60) Elephantiasis tropic (lymphatic filariasis)
(61) Yellow Fever	(62) Zika
(63) Salmonellosis	(64) Lassa hemorrhagic fever
(65) <i>Chlamydia trachomatis</i>	(66) Cryptosporidiosis
(67) <i>Pseudomonas aeruginosa</i>	(68) Q fever
(69) Glanders	(70) Cat scratch disease
(71) Streptobacillosis	(72) Listeriosis

## Team Selection – due by 11:59 pm on March 8

### Part A: (20 points) – due by 11:59 pm on March 29

Your team is asked to **choose one of the situations above** (first sign-up, first choice – your group number corresponds to the pathogen number) and to prepare an **executive summary report** (~1000 words) that you will submit to the corporation's leadership. To assist in preparing the report, you may use the Internet to research current healthcare industry data on current trends, treatments, and protocols for the travel alert you have chosen for your report, as well as scientific journal articles (but not a textbook or lecture notes). Be sure to cite your sources (journal article PMID, website URL, etc.)! You may list the sources on a separate page – they will not count toward the word count.

#### Grading Rubric – For your report address the following points:

- (5) Identify the microbe or virus responsible for the disease, how it causes disease, its mode of transmission, and symptoms of the disease. (4 pts)
- (6) Based on your research, describe briefly how individuals from the corporation who are traveling to those regions can protect themselves. Provide any preventive measures and/or treatments that are currently available and their recommended use. (4 pts)
- (7) Develop **three** questions or concerns (and your answers to them) that you anticipate that the leadership in the corporation will ask you in regard to possible side effects or problems associated with taking the available treatments for the diseases. Provide the rationale behind each of your questions. (6 pts)
- (8) Propose **three** lessons that have been learned from past outbreaks of that disease or similar disease (state which one) that will underscore the importance of preparing for any upcoming trip that a member of the corporation may take to that region and why these lessons will be beneficial in keeping the traveler safe. (6 pts)

NOTE: Teamwork is an important component of this assignment and learning to work in a team is important for success in your future endeavors. Please communicate with each other in a timely manner and work together so that all of you can contribute to the assignments.

### Part B: (20 points) – due by 11:59 pm on April 5

Your team is asked to compile the information gathered in Part A to design a travel advisory poster or infographic that could be used to caution travelers to the region where the travel advisory is in effect. For example, you could use Powerpoint to make your poster, or you may choose to use an infographic application, such as that available at URL: <https://piktochart.com>. Note: This should not be a multipage slide deck! A popular way that many folks present their ideas to higher ups in companies or to funding agencies is to present them in the form of a quad chart. Powerpoint has a feature where you can make a poster in it as a single slide. See: <https://designshack.net/articles/business-articles/how-to-make-a-poster-in-powerpoint/>. If you use images that are not yours, be sure to cite your sources. You may list them on a separate page.

Grading Rubric: 5 pts for completeness and quality of content, 5 pts for creativity, quality, and effort of visual appearance, 5 pts for accuracy and completeness of information and reference sources, 5 pts for effectiveness to inform and educate the public about the situation.

**NOTE:** Submit your material as **pdf files** to the website. Please do not submit as a Google doc link. If you need assistance with printing, see the TA during office hours or make arrangements to meet.

### Part C: (60 points)

– submit Parts A and B to Part C by 11:59 pm on April 15

**NOTE: This is a HARD deadline! If you do not submit by this deadline, you will receive a score of 0!**

**NOTE: MAKE SURE YOU SUBMIT BOTH PARTS A AND B TO PART C in pdf format. Double-check your submission to make sure that you have submitted the correct documents.**

– complete Part C by 11:59 pm on April 26

**NOTE: This is a HARD deadline! If you do not submit by this deadline, you will receive a score of 0!**

**NOTE:** For this assignment, each individual member of the team will need to submit both parts A and B to part C.

In this part, you will participate in peer-evaluating the executive summaries plus posters/infographs that were generated by each of the teams. Specifically, you will evaluate the summaries and posters/infographs of other assigned teams (25 points) and others will be assigned to evaluate your team's information material (25 points). A scoring rubric will be provided on Moodle.

**NOTE:** *If your assessment scores for other projects deviate by more than 2 points from that of the instructor's assessment score without valid justification, then your own assessment will be impacted.*

To ensure fair assessment, each student will evaluate a minimum of 5 other team projects. If the program assigns you two projects that are from students that are on the same team, please let us know ASAP, so that we can reassign another different one.

You will also be asked to self-evaluate your own performance and that of your teammates regarding contributions and efforts for the project (10 points). If you feel that not all your team members contributed equally to this assignment (part A or part B or both), then it is your responsibility to contact your instructors to explain the situation, and we will try to help sort the matter (do this sooner rather than later). Nevertheless, you will also submit a self-assessment of each member of your team (including you) regarding: (1) % participation/effort, and (2) score of 1-5 for quality of each person's contribution. If there is a significant issue, then we will investigate the matter further.

**Note:** Teamwork is an important component of this assignment! If you are having trouble with any team member(s), please let us know and we will try to help.

**MCB 100: Introductory Microbiology  
SPRING 2024**

#	Day	Date	Lecturer	Lecture Topic	Assigned Reading from Bauman, Microbiology, 6 <sup>th</sup> Ed, (Chapter: sections)	Assignments: Due dates & times (ALL lectures have in-class lecture-specific activity)
1	W	1/17	Wilson/ Radin	Introduction: What is microbiology? Importance of scientific literacy	Ch 1	Acquire eTextbook + Mastering Microbiology LMS through Moodle course site Register for iClicker app
2	F	1/19	Wilson	History of microbiology Scientific inquiry and the scientific method	Ch 1	Homework #1 – Tutorial: Introduction to Mastering Microbiology and Introductory closes at 11:59 pm
3	M	1/22	Radin	Overview of microbes: Microscopy Cell structure and classification	Ch 3, Ch 4: read for understanding, with more depth for figures & tables	Homework #2 – Scientific Method Activity (on Moodle) closes at 11:59 pm
4	W	1/24	Wilson	Cell growth and metabolism	Ch 5, Ch 6: read for understanding	Homework #3 closes at 11:59 pm
5	F	1/26	Wilson	Microbial ecosystems	Ch 27	Team Project #1 – team selection due by 11:59 pm
6	M	1/29	Wilson	Microbiomes	Ch 27 Ch 14: sections 14.1-14.3	Homework #4 closes at 11:59 pm
7	W	1/31	Wilson	Environmental microbiology	Ch 26, Ch 27	
8	F	2/2	Wilson	Applied microbiology: Food Microbiology	Ch 26	Homework #5 closes at 11:59 pm
9	M	2/5	Radin	Applied Microbiology: Industrial microbiology	Ch 26 Ch 8: sections 8.1-8.3, 8.21-8.25	Homework #6 closes at 11:59 pm
	<b>W</b>	<b>2/7</b>	<b>Wilson/ Radin</b>	<b>Review Q &amp; A – 2pm EXAM 1 – 7-9 pm</b>	<b>Review session Exam on Lectures 1-9</b>	<b>Exam Room: TBA</b>
10	F	2/9	Radin	Prokaryotes: Bacteria – complex life cycles	Ch 11	
11	M	2/12	Radin	Prokaryotes: Bacteria – Motility & chemotaxis, Adherence & colonization	Ch 11, selected sections of Ch 19, Ch 20	Homework #7 closes at 11:59 pm
12	W	2/14	Radin	Prokaryotes: Bacteria – Bacterial Pathogens – Extracellular & Intracellular Pathogens	Ch 11, selected sections of Ch 19, Ch 20	

13	F	2/16	Wilson	Prokaryotes: Bacteria – Bacterial Pathogens – Toxin mediated disease	Ch 14.4, Ch 11, selected sections of Ch 19, Ch 20, Ch 21	Team Project #1 Part A due by 11:59 pm
14	M	2/19	Wilson	Prokaryotes: Archaea	Ch 11	
15	W	2/21	Wilson	Eukaryotes: Fungi	Ch 12, selected sections of Ch 22	Homework #8 closes at 11:59 pm
16	F	2/23	Wilson	Eukaryotes: Fungal Pathogens	Ch 12, selected sections of Ch 22	
17	M	2/26	Wilson	Eukaryotes: Parasites	Ch 12, selected sections of Ch 23	Team Project #1 Part B due by 11:59 pm
18	W	2/28	Radin	Viruses - Phage	Ch 13	Homework #9 closes at 11:59 pm
19	F	3/1	Radin	Viruses - DNA	Ch 13, selected sections of Ch 24	Team Project #1 submit Parts A and B to Part C due by 11:59 pm
20	M	3/4	Radin	Virus - RNA	Ch 13, selected sections of Ch 25	Homework #10 closes at 11:59 pm
	<b>W</b>	<b>3/6</b>	<b>Wilson/ Radin</b>	<b>Review Q &amp; A – 2pm EXAM 2 – 7-9 pm</b>	<b>Review session Exam on Lectures 10-20</b>	<b>Exam Room: TBA</b>
21	F	3/8	Wilson	Infection & Disease Process – Infection Models & Virulence Factors	Ch 14, selected sections of Ch 1	Team Project #2 – team selection due by 11:59 pm <b>NOTE: last day to drop a course without a “W”</b>
	<b>M</b>	<b>3/11</b>		<b>Spring Break</b>		
	<b>W</b>	<b>3/13</b>		<b>Spring Break</b>		
	<b>F</b>	<b>3/15</b>		<b>Spring Break</b>		
22	M	3/18	Wilson	Transmission & Epidemiology	Ch 14	Team Project #1 Part C due by 11:59 pm
23	W	3/20	Wilson	Introduction to the Immune System - Innate Immunity - barriers	Ch 15	Homework #11 closes at 11:59 pm
24	F	3/22	Radin	Innate Immunity – Phagocytosis	Ch 15	
25	M	3/25	Radin	Innate Immunity – complement & inflammation	Ch 15	Homework #12 closes at 11:59 pm
26	W	3/27	Radin	Adaptive Immunity – antibody responses	Ch 16	
27	F	3/29	Radin	Adaptive Immunity – cell mediated responses	Ch 16	Team Project #2 Part A due by 11:59 pm
28	M	4/1	Radin	Adaptive Immunity – antigen processing, allergic reactions, autoimmunity	Ch 16, Ch 17: read for understanding	Homework #13 closes at 11:59 pm

29	W	4/3	Radin	Evading the Immune Response – bacterial pathogens	Ch 16	
30	F	4/5	Radin	Evading the Immune Response – virus pathogens	Ch 16	Team Project #2 Part B due by 11:59 pm
31	M	4/8	Wilson	Evading the Immune Response – pathogen evolution	Ch 14, selected sections of Ch 7	Homework #14 closes at 11:59 pm
	<b>W</b>	<b>4/10</b>	<b>Wilson/ Radin</b>	<b>Review Q &amp; A – 2 pm EXAM 3 – 7-9 pm</b>	<b>Review session Exam on Lectures 21-31</b>	<b>Exam Room: TBA</b>
32	F	4/12	Radin	Controlling microbes in the environment – part 1	Ch 9	*Honors Key Paper Choice due by 11:59 pm
33	M	4/15	Wilson	Controlling microbes in the environment – part 2	Ch 9	Team Project #2 – submit Parts A and B to Part C due by 11:59 pm
34	W	4/17	Wilson	Controlling microbes in the body - antimicrobials	Ch 10	Homework #15 closes at 11:59 pm
35	F	4/19	Wilson	Antimicrobial resistance	Ch 10	
36	M	4/22	Wilson	Finding new antimicrobials – alternative approaches	Ch 9, Ch 10	Homework #16 closes at 11:59 pm
37	W	4/24	Radin	Vaccines – what makes a good vaccine?	Selected sections of Ch 17, Ch 16, references provide in lecture notes	Homework #17 closes at 11:59 pm
38	F	4/26	Radin	Why vaccines fail	Selected sections of Ch 17, Ch 16, references provide in lecture notes	Team Project #2 – Part C due by 11:59 pm
39	M	4/29	Radin	Immunization programs	Selected sections of Ch 17, Ch 16, references provide in lecture notes	Homework #18 closes at 11:59 pm
	<b>W</b>	<b>5/1</b>	<b>Wilson/ Radin</b>	<b>Review Q &amp; A – 2 pm</b>	<b>Review session on Lectures 32-39</b>	<b>*Honors Mini-Review due by 11:59 pm</b>
	<b>TBD</b>	<b>TBD</b>		<b>FINAL EXAM 1:30 – 4:30 pm</b>	<b>Exam on Lectures 32-39</b>	<b>Exam Room: TBA</b>

\*For those students seeking honors credit. See syllabus for details.