

Microbiology Lecture Syllabus
Biology 2200
1:30-2:20pm M-W-F
Room: General Lectures 100

Fall 2019

Professor: Dr. Jared Schrader (Ph.D.)

Office: Room 2119 Biological Sciences

Phone: 313-577-0736

Email: schrader@wayne.edu

URL: <https://canvas.wayne.edu/>

Office hours: MW 2:30 pm-3:30 pm, STEM Commons in Kresge Library. Other hours may be scheduled on an individual basis.

Required Materials for Lecture: (1) Microbiology an evolving science 4th Edition, Norton press, Slonczewski and foster (2) i>clicker 2

Objectives:

1. To fulfill the WSU General Education Life Science requirement and the core concepts of biological literacy. Students will be instructed in the principles and procedures of modern microbiology including the concepts of microbial growth and control, microbial structure & function, evolution and microbial diversity/adaption, and interactions of microbes with humans, plants and the environment. The influence of microbes on society will be emphasized by introducing microbial application in commercial products and microbial diseases in their co-evolution with host responses.

2. From the laboratory course, students will gain insight into the nature of scientific inquiry, the process by which knowledge is accumulated and accepted as illustrated, and the strengths and limitations of the scientific process and its progressive, self-correcting qualities. Observational and experimental skills will be imparted to students, using both traditional and discovery-based learning. The students will experience the scientific method first hand in performing experiments that reflect the current state of the art and demonstrate the principles underlying major concepts of modern microbiology. Students will also learn to properly record their data in a laboratory notebook.

Course Outcomes:

At the end of this course, students will be able to

1. explain the role microbes play in our environment/society
2. describe how microbes can be controlled and exploited for industrial application.
3. describe microbial diversity and the core features of prokaryotic versus eukaryotic cell structure and physiology.
4. describe basic concepts of medical microbiology and immunology
5. apply the principals of sterile technique and use the tools required to study microorganisms.

CONTACTING DR. SCHRADER AND GETTING HELP

Discussion Board: There is a discussion board in Canvas. This is a good place for simple content questions. There will be a forum for discussing exam questions.

Peer Mentors: You will have an opportunity to work with peer mentors who have been exemplary students in Bio 2200 in previous semesters. A list of times for weekly study sessions in the STEM commons is or will be available in canvas.

STEM commons: The STEM commons has study tables available for different groups to drop in and work together. If you would like to study with others, just show up and join the bio 2200 table and you can find others to work with. This semester it is located in Kresge Library.

Academic Success Center: There will be tutoring and other workshops in the Academic Success Center. See <http://success.wayne.edu/> and future posts on canvas for more information. Bio2200 has a supplemental instruction (SI) available. Your SI leader is Aleksandria Bartosiewicz. More information will be available in the first week of classes.

Email: See the email guidelines in General Policy 5. Email is a good way to communicate with me about issues that do not need you to come to office hours. These include letting me know about chronic clicker or canvas problems. I cannot answer questions on biology content or study strategies by email, because these require discussions. I do not answer emails about issues that are covered in the syllabus, in canvas or that were adequately covered in lecture.

In the lecture hall before or after class: This is a fine time for quick questions, but there usually is not time for long discussions. I have limited time to set up before class and get out of the way after class for the next class. When I am at the podium setting up, I need to set up and cannot answer even quick questions. I can often take questions after class, but we will have to go to the lobby to accommodate the next class.

Office Hours: **Dr. Schrader's office hours are 2:30am to 3:30 pm on Mondays and Wednesdays in (STEM Commons, located in Kresge Library) (maps.wayne.edu/).** Office hours are the best time to talk about your questions on biology content or issues that are specific to you, such as concerns about the course, study strategies, grade inquiries, special needs or careers. You do not need an appointment to come to office hours, just come to my office. If you cannot make office hours because of conflicts with classes, email me for an appointment at least 24 hours in advance. Keep in mind you can always look for help will be your peers/peer mentors/TAs.

WSU Computing and Information Technology (C & IT): For free help with campus computing, including email, canvas, or your AccessID call (313) 577-4778, see <http://computing.wayne.edu/> or email helpdesk@wayne.edu.

Lab: The lab is directed by Krystyn Purvis. **Contact your TA first for lab questions, then Krystyn Purvis, as directed in the lab syllabus.**

Course Credits: 5-credits

Course Prerequisites: Students are required to have completed BIO 1510 (Basic Life Mechanisms) with a C or higher. Students who managed to enroll in this course without satisfying this prerequisite will be required to drop it. Students who have questions regarding these prerequisites should see one of the Biological Science Department's Undergraduate Advisors during the first week of class.

Withdrawals:

See WSU policy at: <http://sdcl.wayne.edu/RegistrarWeb/Registrar/policies.htm>

I encourage you to get help instead of withdrawing (see the Academic Success Center information at the end of this syllabus); this will save you money and help you graduate sooner. If you must withdraw, it must be initiated by the student through the registrar's office via Pipeline, not by the Professor. The Professor will assign the withdrawal grade based on the following WSU policies and rules regarding grade assignment, repeating and withdrawing from classes:

1. Students who drop the course by **Sept. 11, 2019** are eligible for full tuition refund.
2. The last day you can drop this course and have no record on your transcript is **Sept. 11, 2019**
3. Students who request course withdrawals by **Nov. 10, 2019** (last day to withdraw) will receive one of these notations:
 - “WP” Withdrawal with a passing grade earned to date
 - “WF” Withdrawal with a failing grade earned to date
 - “WN” Withdrawal never attended, or no graded work to dateGrade earned to date will not include lab points; all exam scores will be included (*ie* no drops allowed).
4. Students who do not complete the semester will receive a grade of F if they do not withdraw from class by Sunday, November 10th. “Incomplete” grades will not be issued to students in poor standing who are seeking an alternative to a late drop.

Grades: A total of 1025 points are possible for the course. Of these 1025 points, 625 points are from LECTURE and 400 points are from the LABORATORY (see laboratory syllabus).

Four hourly exams (120 points each) and a comprehensive final exam (240 points) will be given. The hourly exam with the lowest score will be dropped. The final cannot be dropped.

Since the lowest hourly exam will be dropped, NO MAKEUP EXAMS WILL BE GIVEN AND NO EXAMS WILL BE GIVEN IN ADVANCE.

Grading summary:

Lecture

4 x 120 point exams	+480 points
Lowest exam dropped	-120
Clicker questions	+10
<u>Comprehensive final</u>	<u>+240</u>
Lecture total possible	610
Extra credit pre-reading assignment	+10
Extra credit bonus quizzes	+5
Extra credit written exam Q's	+10

Laboratory

Daily quizzes (CPS)	+25 points
Pre-lab writeup	+25
Microscopy exercise	+5
Laboratory notebook	+95
Laboratory midterm	+100
<u>Comprehensive Lab Final</u>	<u>+150</u>
Lab total possible	400
Identification of unknown extra credit	10

TOTAL COURSE POINTS POSSIBLE: 1010 POINTS

Exam corrections: When each exam is returned, you will have THREE BUSINESS DAYS to correct errors in grading or to challenge the questions on the exam. Corrections and inquiries about specific exam questions must occur on canvas in the exam discussion forum. If needed, I will normalize the exam scores to the score of the second highest student.

Final Course Grade: A letter grade is calculated after your total score is converted into a percentage and assigned a letter grade according to the table below:

Total Percentage / Final Grade

- 93% – 100% A
- 90% – <93% A-
- 88% – <90% B+

83% – <88% B
80% – <83% B-
78% – <80% C+
73% – <78% C
70% – <73% C-
68% – <70% D+
63% – <68% D
60% – <63% D-
<60% F

Grades will NOT be rounded up due to the provided extra credit assignments which provide you a mechanism to bump yourself up to the next grade.

Clickers: A classroom response system, i>clicker 2, is used to provide an interactive component. Answering a clicker question will give you ½ clicker point for answering and another ½ clicker point for answering correctly. If you receive >85% of all the clicker points, you will be automatically receive all 10 lecture points for this category. If you score less than 85% of the possible clicker points, you will receive that percentage of the 10 possible lecture points. Student caught having another student’s clicker will result in both students receiving 0 clicker points and extra credit points for the entire semester and referral to the dean of student’s office for possible further actions.

Register your iclicker serial number **via our canvas site** (under the menu tab on the left as “Register Your Clicker Here”), so that your name is associated with the clicker (and thus I can assign you the points you earned). NOTE: Clicker points are **only** assigned at the end of the semester and do not count towards a drop grade (WF, WP).

Extra credit bonus quizzes: Several online quizzes will be given for extra credit. The quiz will be open all week on canvas for you to answer. You will only have one attempt at the bonus quiz and the answers will not be revealed until the following week.

Pre-reading extra credit assignments: Before each lecture an online assignment will be placed on canvas 24 hours prior to class. The assignment will cover the material that will be presented on the day of class. Students will read the assigned chapters and answer these questions on their own or in groups and with the help of their textbooks. These assignments cannot harm your grade and can yield up to 10 extra credit points. You will have three attempts to find the correct answer and correct spelling/grammar is required for fill in the blank questions!

Extra credit for writing exam questions: Students will have the opportunity to write exam questions as part of a team study exercise. Questions will be submitted to a peer mentor and approved by Dr. Schrader to enter the pool of study derived questions. If your team’s exam question is selected for the exam, all members of your team will earn 1 point of extra credit for each question selected (for a maximum of 10 points). Only students attending >3/4 of team meetings by the end of the semester will be allowed to earn extra credit points. Only higher-level critical thinking questions will be allowed (no true/false, or simple definition questions). Students can also submit test questions in small groups or on their own during peer mentor office

hours. These student generated test bank questions will be compiled by the peer mentors and made available to all students in the class to study from.

Be respectful to your classmates: As you are probably aware, talking during large lecture classes can distract your neighbors and interfere with their learning. Please be respectful to your neighbors. You will be given class time to work together in groups so please hold off on your conversations until the designated times.

During lecture, electronic devices may ONLY be used for the purposes of the class, such as taking notes or answering clicker questions. The consequences for misusing an electronic device in class will be that we will require you to put away your electronics, and will take your device or clicker to return at the end of class.

Academic integrity: To acknowledge that most, if not all, students do not cheat, the following policy will be strictly observed in accordance with the WSU policy on cheating.

1. Any individuals caught cheating will automatically receive a grade of "F" for at least the exam and up to and including failing the class and expulsion from WSU. Charges may be filed in accordance with the university policy on academic honesty (<http://www.doso.wayne.edu/judicial/academic-integrity.htm>). Read this carefully.

Cheating includes cheating on exams or misuse of clickers. You may only use your own clicker. Do not risk getting caught with a clicker that does not belong to you, or having your clicker caught with someone else. If you are caught with someone else's clicker in class, or someone else has your clicker in class you will both earn a zero for ALL of the clicker points for that unit or the whole semester. For extra credit quizzes in this class, you may work with other people and use your textbook/internet while you are working. The point of the quizzes is to guide the learning of the material, so use it to help you reach that goal. It is fine if this includes getting help, so this is not cheating.

2. **Picture identification** will be required for each exam. Individuals without picture ID will not be allowed in the examination room. You will also need to provide your banner ID on your exam, and failing to do so will result in a penalty on your exam grade.

3. You must arrive on time for the exam. Students who arrive after the first student has finished with the exam and left the room will not be allowed to take the exam.

4. Students will not be allowed to leave the room once they enter. Once a student has left the room, he or she will not be allowed to return.

5. Absolutely **no talking or communication** among students will be tolerated during the exam.

Student Disability Services: If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services Department. SDS telephone number is (313) 577-1851 or (313) 577-3365 (TTD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to

discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

General Policies:

1) Missing Class. Students are expected to attend every class and lab in person. If you are going to miss class on a non-exam day, please see the grading policies for homework and clicker participation above. I do NOT give individual extensions or exceptions for personal reasons, including but not limited to illness, travel, weddings, transportation problems, weather, funerals, dependent care or family obligations. The general course policies take into account that sometimes students will need to miss one or two classes. See the details under homework and clickers above.

There are exceptions are for Student Disability accommodations, jury duty and court dates. If you have a disability, please see general policy 3 below. I want to accommodate disabilities, but I cannot accommodate situations I do not know about ahead of time. Please let me know early in the semester if you need an accommodation. If you have jury duty or a court date during lecture or an exam, please email me as soon as you know there will be a conflict so we can make arrangements.

2) Professional behavior is expected in lecture and labs, which includes respecting your classmates by arriving on time, not having distractions on electronic devices and not talking. All students must show respect in language and attitude towards the instructors and their fellow students. You are encouraged to discuss differences of opinion with each other, respectfully. Disrespectful students will be asked to leave the lecture or lab, and will lose their opportunity to turn in any missed assignments or earn any points for the day. No unregistered people may attend labs or lecture, including children. **If you are disrupting your study group, your peer mentor will move you to another team in the group, so that everyone can learn better.**

3) Any special considerations (disabilities, religious holiday conflicts, etc.) must be brought my attention by 8/31/2016 or as soon as possible as the situation arises. If you have a documented disability that requires accommodations, you need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, I will be glad to meet with you privately **during my office hours** to discuss your special needs. **You need bring your paperwork to office hours so I can process it and give you the answer sheets that you will need.** Please refer to the SDS website for further information about students with disabilities and the services we provide for faculty and students: <http://studentdisability.wayne.edu/> If your disability requires you to sit in a certain part of the classroom, please sign up for a team that meets your needs. If you have a concern

about seating in the lecture hall, for example you have a disability that requires you to sit at the tables in the back, please email me as soon as possible so we can make arrangements.

4) If you need to see me and cannot come during office hours, you need to set up an appointment by email. In order to schedule these appointments, you need to contact me at least 24 hours in advance. Please include three unique times that you can meet me. I cannot guarantee I will be available, but I try to meet the needs of all my students.

5) **Email guidelines:** I will not reply to emails when the answer can be found in the syllabus or on canvas. I do not answer questions on biology content or study strategies by email because I need to discuss content with students to make sure they understand. I am happy to answer content questions during office hours. That is one of the main purposes of office hours. I will respond to most other emails within **two business days**. After two business days, you may email me again. **Due to privacy laws and for professionalism you must email me from your WSU email account.** I expect emails to be in a professional style, with your course number and a description of the issue (not just your name) as the subject, a proper greeting, e.g. “Dear Professor Schrader,” a proper salutation, e.g. “Sincerely, Chris Smith,” correct punctuation including capitalization and no texting abbreviations. Emails that do not follow these rules may take longer get a reply, may be returned for correction, or ignored. If I cannot figure out what you want, I cannot help you. Following these email guidelines even outside of this course will enhance your success at WSU and beyond.

6) Letters of recommendation are to give people an idea of who you are beyond the grades and classes on your transcript. I do not write letters for students who I only know from my classes. You are likely to need letters from professors that actually know you personally. Start planning now how you will get involved on campus so you will have professors who know you well enough to write a letter for you. Examples of how you can get involved include doing research with a professor (uop.wayne.edu), joining a club, or becoming a peer mentor or supplemental instructor.

7) University closures will be publicized through:

- The University Newslines (313) 577-5345*,
- WSU Homepage (www.wayne.edu)*,
- WSU Pipeline (www.pipeline.wayne.edu)*,
- WDET-FM (Public Radio 101.9) and
- by other local radio and television stations.

* Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations.

If the university is closed that includes lecture, labs, any learning community or team meetings, supplemental instruction and office hours. If a unit exam is scheduled on a day when the University or lecture room is officially closed during class, the exam will be held during the next scheduled meeting of lecture that occurs when the University and room are open, or as indicated on the class canvas site.

8) For any and all issues not covered in this syllabus, refer to the “Student Code of Conduct”, which can be found at <http://doso.wayne.edu/assets/codeofconduct.pdf>

9) Updates to this syllabus and schedule may be posted on the course canvas website at <https://canvas.wayne.edu/>. You are responsible for checking canvas announcements and your University email account. I recommend checking at least once each business day of a semester in which you are enrolled.

Week	Lecture	Day	Date	Topic	Chapter
1	1	W	8/28/19	Course overview/Microorganism and microbiology	1
	2	F	8/30/19	The microbial cell	1,2
2		M	9/2/19	Labor Day – No Class	
	3	W	9/4/19	Observing the microbial cell	2
	4	F	9/6/19	Cell structure and function	3
3	5	M	9/9/19	Cell structure and function	3
	6	W	9/11/19	Bacterial culture, growth, and development	4
	7	F	9/13/19	Bacterial culture, growth, and development	4
4	8	M	9/16/19	Environmental influences and control of microbial growth (Guest Lecturer)	5
	9	W	9/19/19	Environmental influences and control of microbial growth	5
	10	F	9/20/19	Viruses	6
5		M	9/23/19	Exam 1 (120 points)	1-6
	11	W	9/25/19	Genomes and chromosomes	7
	12	F	9/27/19	Genomes and chromosomes	7
6	13	M	9/30/19	Transcription, translation, and bioinformatics	8
	14	W	10/2/19	Transcription, translation, and bioinformatics	8
	15	F	10/4/19	Gene transfer, mutations, and genome evolution	9
7	16	M	10/7/19	Gene transfer, mutations, and genome evolution	9
	17	W	10/9/19	Molecular regulation	10
	18	F	10/11/19	Molecular regulation	10
8		M	10/14/19	Exam 2 (120 points)	7-10
	19	W	10/16/19	Viral molecular biology	11
	20	F	10/19/19	Viral molecular biology	11
9	21	M	10/21/19	Biotechniques and synthetic biology	12
	22	W	10/23/19	Energetics and catabolism	13
	23	F	10/25/19	Energetics and catabolism	13
10	24	M	10/28/19	Electron flow in organotrophy, lithotrophy, and phototrophy	14
	25	W	10/30/19	Biosynthesis	15
	26	F	11/1/19	Food and industrial microbiology (Depending on time)	16
11		M	11/4/19	Exam 3 (120 points)	11-16
	27	W	11/6/19	Human microbiota and innate immunity	23
	28	F	11/8/19	Human microbiota and innate immunity	23
12	29	M	11/11/19	The adaptive immune response	24
	30	W	11/13/19	The adaptive immune response	24
	31	F	11/15/19	Microbial pathogenesis	25
13	32	M	11/18/19	Microbial pathogenesis	25
	33	W	11/20/19	Thanksgiving break no class	
	34	F	11/22/19		
14	35	M	11/25/19	Microbial diseases	26
		W	11/27/19	Microbial diseases	26
		F	11/29/19	Antimicrobial therapy	27
15	36	M	12/2/19	Antimicrobial therapy	27
	37	W	12/4/19	Clinical microbiology and immunology	28
	38	F	12/6/19	Clinical microbiology and immunology	28
16		M	12/9/19	Exam 4 (120 points)	23-28
		Tu	12/10/19	Study Day	
		M	12/16/19	Comprehensive Final: 12:30-2:30PM Gen. Lectures 100 (240 points)	1-16,23-28