University of Nebraska at Kearney

Microbial Diversity (Biol 812)
Summer 2020

Instructor: Gregory Pec
Emails: pecg@unk.edu (please include "Biol 812" in the subject line of all emails)
Office: BHS 319
Office Hours: M, W, R 11 am – 12 pm or by appointment. Email should be used judiciously to address questions pertaining to course administration/scheduling or urgent matters. Direct issues related to the course content should be posted to the Canvas forum described below.

Course description: Microbes are the most abundant and diverse organisms on Earth. Collectively, they play critical roles in biogeochemical cycling, human health, and food production. This course will explore the evolutionary and ecological processes that generate and maintain microbial diversity. Students will also be exposed to molecular and bioinformatic approaches that are used to study microorganisms in a variety of habitats, including freshwater, marine and terrestrial.

Course objectives: This course will introduce the range of biological diversity in the microbial world and provide an understanding of the importance of microorganisms beyond those of medical importance. In addition, this course will introduce students to the tools used to identify and characterize microorganisms.

Computer requirements: Access to a computer with internet connectivity and Microsoft Office. An updated PDF reader will also be needed to read course materials. Please refer to the eCampus website for meeting minimum hardware/software and internet connection speed required by all UNK eCampus students (http://www.unk.edu/academics/ecampus/resources-info/students/technology/requirements.php).

Required Text: Willey, Joanne. Prescott's Microbiology. Eleventh Edition. 2020. ISBN: 97801260211887. Available from the bookstore. Readings will be assigned from the textbook to complement the lectures and discussions. If you have a previous version of this textbook, please let me know as you may be able to use it in lieu of the latest version.

Canvas: For this class we will use an online course management system called Canvas. Course information, updates and related information, etc. will be posted here. I have also created a forum in Canvas for asking/answering questions about lecture concepts. **Course content related questions will not be answered via email**.

Course structure: This course consists of recorded lectures, reading assignments, and online discussion boards. All materials for each week will be posted on Canvas. This is not a self-paced course. You will be expected to keep up with the pace of the course, and the course structure is designed to help with this. If this is your first distance class, you will find that these classes can be fast paced. Everyone in these classes is busy with work, school, and family. I understand, but if you start to fall behind, it may be difficult to catch up. Please do not hesitate to contact me.

Lectures: Audio/video lectures and the accompanying presentations will be posted on Mondays and Thursdays to Canvas.

Assignments:

Discussion boards: Discussion boards will begin on Tuesdays and run through to Wednesday of the following week. Students will be expected to respond to the discussion question(s) and to other students' comments. This will allow us to talk about the lectures and answer any questions that students might have. There will be a total of 7 weeks of discussion, each week being worth 50 points (350 points total). Participation marks will be based on the following criteria:

(1) For the initial post, you will reply to the question(s) posted by Thursday (25 points).
(2) The second part of the assignment is to respond to two of your classmates' postings by expanding on what they have written. These responses are due by the following Monday (15 points).
(3) The third part of the assignment is to respond back to your classmates who replied to your postings. This may include clarifying or expanding on an idea that was not clear. These responses are due by the following Wednesday (10 points).

Further details will be provided for each discussion board assignment. In addition to this weekly mechanism for student participation, please become familiar with all other such policies on attendance found in the University Graduate catalog (https://catalog.unk.edu/graduate/academics/academic-regulations/expectations-in-the-classroom/class-attendance/)

Papers: You will be assigned two paper topics. Each paper will be 2-3 pages in length and worth 50 points each (100 points total). These will be assigned early in the semester and will cover material that we will have been discussing in lecture. Further details will be provided for each paper topic assignment.

Short-answer follow-ups: This assignment (100 points) will test your understanding of course material, focusing on synthesis of information (i.e., big picture/important concepts). This will be an open resource and an on-going assignment, which means that you will have access to the questions early in the semester. Further details will be provided for this assignment.

In addition to the core material, this course is designed to help improve your critical-thinking skills. As reading and understanding scientific information is critical to the way science, in general, works, my hope is that following this assignment, you are better able to integrate fundamental scientific knowledge and communicate those scientific concepts and analytical arguments clearly and concisely. This assignment must be submitted as a .docx or pdf file format through the Canvas Turnitin function.

Grading Evaluation: Grades will be assigned using the standard grading scale for the Department of Biology, as follows:

A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%).

Assignment	**Points**
Discussion boards (7 wks @ 50 points)	350
Papers (2-3 pages, 50 points each)	100
Short-answer follow-ups	100
Class total	450

Student Responsibilities:

Email: You must use your UNK email to receive any updates associated with the course. As email is a preferred mode of communication for online courses, I make an effort to be timely in my responses. Since I may not always have access to email or be in my office, emails will be answered within 24 hours on weekdays. Emails sent after 3 pm (CST) on Fridays will be answered on the following Monday.

Marks: Marks will be posted on the course Canvas page when available. Grading errors must be brought to the attention of the instructor within five days of the marks being released to the class.

Late Assignments: Without a valid excuse, any assignment not turned in on time is a late assignment. Late assignments will be docked 10% of the total possible points per day, holidays and weekends excluded.

Academic Integrity and Academic Honesty: This course, like all UNK courses, abides by all University policies as outlined in the UNK Student Handbook, which contains the UNK Student Code of Conduct. More information can be found in the University Graduate catalog (https://catalog.unk.edu/graduate/academics/).

Plagiarism and Cheating: Anyone found plagiarizing or cheating will receive a 0 for that assignment; subsequent violations will result in referral to the Vice Chancellor for Academic Affairs. Cheating (at any level) is an intolerable behavior that has no place in any scientific, educational, or social activity.

Policy on Withdraw (W) and Incomplete (I) grades: Students may not withdraw past the mid-point of a class (i.e. end of the 4th week of an 8-week summer class) unless extenuating circumstances exist, in which case the student may receive a "W". Extenuating circumstances are defined as circumstances that occur AFTER the mid-point of the course and beyond the control of the student which in the judgment of the Vice Chancellor for Academic Affairs, in consultation with the Exceptional Withdrawal Committee, constitute appropriate cause for withdrawal.

Students will receive a "W" on their transcript (which indicates a withdrawal) for classes dropped on or after the first day of the class. A failing grade of "F" will be recorded on the transcript if a student stops attending class and neither officially withdraws from the course prior to the appropriate deadline nor establishes, prior to the end of the class and to the satisfaction of the instructor, that extenuating circumstances prevented completion of the course.

To be considered for an incomplete, a mark of "I" is reserved for conditions in which a student has been unable, due to circumstances beyond his or her control, to complete the course by the end of the term. Unless an extension of time is granted in writing by the Office of Student Records and Registration, an incomplete must be removed within twelve calendar months. If the course work is not completed during this time, then the "I" will convert to an "F" on the student's transcript and cannot be changed other than by re-registering for the course.

If an extension is desired, the student must initiate a written request for a specific time of extension, must exhibit extenuating circumstances beyond his/her control, and must make the request in advance of the twelve-month expiration. The request must be supported by a written endorsement from the course instructor, or the department chairperson in the absence of the instructor and submitted to the Registrar's Office prior to the expiration of the twelve-month period.

Distribution of course materials: Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Students with Disabilities: It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with UNK Disabilities Services for Students Office, 172 Memorial Student Affairs Building, 308-865-8988 or by email unkdso@unk.edu

Students Who are Pregnant: It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To

receive accommodation services due to pregnancy, students must contact Cindy Ference in Student Health, 308-865-8219. The following link provides information for students and faculty regarding pregnancy rights. http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault: Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

Local Domestic Violence, Sexual Assault Advocacy Agency 308-237-2599

Campus Police (or Security) 308-865-8911

Title IX Coordinator 308-865-8655
Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

If you have questions regarding the information in this email please contact **Mary Chinnock Petroski, Chief Compliance Officer (petroskimj@unk.edu or phone 8400).**

Disclaimer: Any typographical errors in this Course Outline are subject to change and will be announced on the course Canvas page.

Tentative course schedule

Week	Lecture	Topic	Assigned Readings
		The diversity of the microbial world	
1	1	Introduction & what is microbial diversity?	Ch.1
1	2	Microbial taxonomy and the evolution of diversity	Ch.19
2	3	Mechanisms of genetic variation	Ch.16
2	4	Archaea	Ch.20
3	5	Non-proteobacterial gram-negative bacteria	Ch.21
3	6	Proteobacteria	Ch.22
4	7	Gram-positive bacteria	Ch.23
4	8	Protists	Ch.24
5	9	Fungi	Ch.25
5	10	Viruses	Ch.26
		Ecology and symbiosis	
6	11	Microbial interactions	Ch.27
6	12	Biogeochemical cycling	Ch.28
6	13	Methods in microbial ecology	Ch.29
7	14	Microorganisms in marine, freshwater, and terrestrial ecosystems	Ch.30-31
7	15	The microbe-human ecosystem	Ch.34
		Microbial molecular biology and genetics	
8	16	Microbial DNA technologies and genomics	Ch.17-18
8	17	Conclusions: the phylogenetic perspective	