

# BIOL 812 Microbial Diversity

## Spring 2018

**INSTRUCTOR** Brandon Luedtke  
Assistant Professor of Biology  
Bruner Hall Rm 201E  
(308) 865-8000  
[luedtkebe@unk.edu](mailto:luedtkebe@unk.edu)

**OFFICE HOURS** Mon-Wed 9 am – 10 am; Tues-Thurs 1-2 PM or by appointment

**COURSE OBJECTIVES**

1. To introduce students to the diversity of microorganisms and provide them with a basic understanding of the complexity of relatedness.
2. To develop an understanding of the importance of microorganisms beyond those of medical importance.
3. To create an appreciation for the difficulty we have in identifying and characterizing microorganisms.
4. To introduce students to the tools used to identify and characterize microorganisms.

### REQUIRED MATERIALS

**Computer and Software:** Access to a computer with Internet access (the faster the better, but modem speed will be adequate) and a word-processing software program. I require you to use Microsoft Office 2007 or newer. No other formats, such as “.wpd,” will be accepted. Microsoft Office 2007, Academic Version is available from our bookstore inexpensively. A school ID, or other verification of enrollment (or employment as a teacher) may be required. The software is available for PC and Mac OS.

Additional software will be used for phylogenetic analysis in assignments and the final project. All of these are available as freeware. In most cases this software is available for both PC and Mac OS or can be used via an online server.

### INSTRUCTION

For this class I will use an online course management system called Canvas. This provides standard interfaces for grades, assignments, discussions, and other functions. You will need to become familiar with this application. Also, check the announcements page of Canvas for breaking news. Any information I need to get to the class as a whole will be on this opening page.

In addition, you will find other useful material at the class Canvas page. Among the things on the webpage will be the syllabus and other useful documents, links to other sites that have information you may need to visit to learn information and your grades.

All lectures will be posted on Canvas (Remember that this information is copyrighted, so it is illegal to copy this material and distribute it.)

I also expect you to keep up with the pace of the course. If this is your first distance class, you will find that these classes are rigorous and fast paced. If you fall behind, you will have a difficult time catching up, getting an A, or maybe even completing the course. Please do not procrastinate.

Since email is the preferred mode of communication for most online courses, I make an effort to be timely with 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 on Fridays and on weekends will be answered on Monday.

## GRADES AND GRADING

Your grade for this course is weekly quizzes, project assignments and a final paper. Your Grade will be calculated as follows:

| Graded Assignments           | Points     |
|------------------------------|------------|
| 2 Short papers (25pts each)  | 50         |
| 1 Longer paper (50 pts)      | 50         |
| Discussion (10 wks @ 10 pts) | 100        |
| Project and Final Paper      | 170        |
| <b>Class Total</b>           | <b>370</b> |

**Grading Scale.** 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%).

## Papers

Instead of exams, you will be assigned three paper topics. The first 25 point paper will be a 2-3 page paper over the basic characteristics of one of our model bacteria. The second 25 point paper will be to compare identification methods now to those more antiquated techniques. The third paper will be to compare the model organism from your first paper with a second more “unusual” bacterium. This will be a 5 page 50 point paper. These will be assigned early in the semester and will cover material that we will have been discussing in lecture.

**Paper 1: Assigned January 15**

**Due January 29 by 5 p.m. CST**

**Paper 2: Assigned February 5**

**Due February 19 by 5 p.m. CST**

**Paper 3: Assigned February 26**

**Due March 18 by 5 p.m. CST**

## Discussion Board

This class will meet for discussion of weekly lectures and readings. I will begin on Wednesdays by placing a few questions on the discussion board each week for students to discuss through Tuesday of the next week. This will also allow us to discuss the lectures and answer any questions that students might have. Students will be graded on a 10 pt scale each week. I would expect at least 2 significant contributions each week. A significant discussion must have the references attached for full credit. These are discussions, so I don't expect everyone to just keep answering the same question over and over again. I expect discussions between students. You can ask additional questions during this time as your contribution. We will have 11 weeks of lecture and discussion. I will grade 10 weeks worth of participation. Participation in class will be monitored and graded based on the following criteria:

- 1) **How often you participate.** You should check the discussion board every other day. You are welcome to suggest other readings, websites, and similar materials that may carry discussion and inquiry in new directions. Grades will be lowered if all comments are posted on one visit to the Canvas site or the student always posts on the last day with no other students contributing to their discussion topic.
- 2) **The quality of your contribution.** This is a subjective category, but the more insightful your comments the better the quality of discussion will be. Conciseness and clarity are necessary to keep the workload for this class to a reasonable level so page long postings are discouraged. Your comments should be supported with specific details and should be relevant to the current case study being discussed. Sources should be cited.
- 3) **How well you interact as classmates.** Be nice to your classmates and constructive in your responses. These are online discussions of scientific issues. You should read all postings, and you should respond to some of them. Your responses should demonstrate that you are aware of the discussion that has been taking place. Go beyond either "agreeing" with someone or "disagreeing" with someone and state your reasons. I will remove any posts that are inflammatory or abusive. You will lose points if this happens.

## Research Project

A substantial component of your grade is based upon completion and interpretation of a research project. You can think of this project as the capstone for this class. For this project you will be assigned a set of DNA sequences and will use phylogenetic analyses to classify the corresponding microorganism. The project is broken up into parts and a final paper. We will do this toward the end of class when you have more time to devote to the project and a good understanding of what we're doing. It is important that you understand each step because each part of the project is dependent on the proceeding part. It is very important that you complete each assignment on time and heed the suggestions given. It is possible that you will have to redo one or more of the steps in order for the subsequent steps to work.

For the final paper your project results will be written up as a journal article in which you will provide background, describe methodology, and interpret your results. The paper will include the standard sections found in scientific journals (Introduction, Materials and Methods, Results, and Discussion) and will require the use of primary literature. More information will be made available at a later time.

## SCHEDULE

| Week        | Lectures to View              | Assignments  |
|-------------|-------------------------------|--|
| January 8   | Intro to the Class            | <b>Discussion Board #1</b><br>Introductions and Questions                |
| January 15  | 1 & 2                         | <b>Assignment 1:</b> short paper assigned                                |
| January 22  | 3 & 4                         | <b>Discussion Board #2</b>   |
| January 29  | 5 & 6                         | <b>Discussion Board #3</b><br><b>Assignment 1:</b> due                   |
| February 5  | 7                             | <b>Discussion Board #4</b><br><b>Assignment 2:</b> short paper assigned  |
| February 12 | 8, 9, & 10                    | <b>Discussion Board #5</b>   |
| February 19 | 11, 12, & 13                  | <b>Discussion Board #6</b><br><b>Assignment 2:</b> due                   |
| February 26 | 14, 15, & 16                  | <b>Discussion Board #7</b><br><b>Assignment 3:</b> longer paper assigned |
| March 5     | 18 & 19                       | <b>Discussion Board #8</b>   |
| March 12    | 20 & 21                       | <b>Discussion Board #9</b>   |
| March 19    | None                          | <b>Spring Break</b>  |
| March 26    | 22                            | <b>Discussion Board #10</b><br><b>Assignment 3:</b> due                  |
| April 2     | 23 & 24                       | <b>Discussion Board #11</b>  |
| April 9     | Intro to the research project | <b>Research Project:</b> Literature Review and Preparing Sequence        |
| April 16    | None                          | <b>Research Project:</b> Classifying Sequence                            |
| April 23    | None                          | <b>Research Project:</b> Creating Trees                                  |
| April 30    | None                          | <b>Research Paper:</b> Due May 3 by 5 p.m. CST                           |

## **ADDITIONAL INFORMATION**

### **Students with Disabilities or Who are Pregnant**

It is the policy of the University of Nebraska at Kearney to provide flexible, individualized, [and](#) reasonable accommodations to students with documented disabilities or students who are pregnant. To receive accommodation services for a disability, students must be registered with UNK Disabilities Services. Contact David Brandt, in the Academic Success Office, 163 Memorial Student Affairs Building, 308-865-8214 or by email [brandtdl@unk.edu](mailto:brandtdl@unk.edu) to register.

For students needing accommodation due to pregnancy, you need to contact Student Health. (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>) Students with disabilities or students who are pregnant need to provide the proper documentation from Disability Services or Student Health to their faculty members in order to receive academic accommodations. Anyone who feels they were not afforded these rights, should contact the campus Title IX/ADA Officer at 308-865-8655.

### **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) 308-627-4811

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, Human Resources Director ([petroskimj@unk.edu](mailto:petroskimj@unk.edu) or phone 8655).

**Withdraw (W) and Incomplete (I) Grades:**

Until the conclusion of the 5th week of the semester, you may withdraw from any class and receive a grade of "W." This grade does not count toward your grade point average and merely indicates that you withdrew from (or "dropped") the class. No instructor can withdraw a student from the roster; that is, if you stop coming to class the instructor cannot withdraw you from the class. The instructor will be forced to assign you a failing ("F") grade for the class.

Withdrawing from a class involves filling out a simple form that the instructor and student both sign and returning this form to the registrar's office by the withdraw deadline.

Under very unusual circumstances, a grade of incomplete ("I") may be issued. An incomplete is not a substitute for a "W" (withdraw), and it is not a substitute for a poor or failing grade. An incomplete is issued if circumstances beyond the student's control prevent the student from completing the required work for the class by the end of the semester (example: the student is hospitalized during final exam week). If you qualify for an incomplete grade, it is expected that you will receive this grade in all your classes. An incomplete grade will give you an extension to complete outstanding work only; it is not an opportunity to "start over" in the class. All outstanding work must be completed within one year or the "I" grade automatically converts to a failing ("F") grade. An incomplete grade will be considered only during the final six weeks of the semester, after the deadline for receiving a "W" has passed.