

Biology 2221: Microbiology

Jeffrey Bell, Ph.D.

Details: Microbiology Online – 3 credits

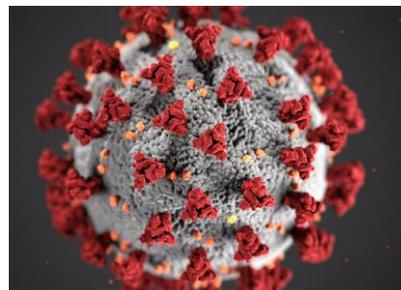
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Office Hours: 10-1 TW



Course Description:

(Fulfills MNTC Area: 3) This course is an introduction to fundamental theories, principles and methods of microbiology. Structure, effects of physical factors, and inhibition and killing of microorganisms will be studied. Microbial interactions with humans and their immune systems are introduced. Students are familiarized with concepts in environmental microbiology, evolution and microbial species diversity as well as the necessary laboratory techniques needed to study those organisms. This course includes 2 lecture hours and 2 lab hours per week.

Co-requisite or Prerequisite(s): none

Course Objectives and intent of the course are that successful students will:

1. Describe the principles of scientific investigation as applied to microbiology.
2. Distinguish the difference between a bacteria, virus, and fungus.
3. Summarize the positive role that microorganisms play in our lives.
4. Identify ecosystems where microorganisms thrive.
5. Explain the function of the innate immune system and the adaptive immune system.
6. Define microbes that cause human diseases and the resulting elicited immune response.
7. Describe methods that the knowledge of microorganisms is used in vaccination, diagnosis, food and cosmetic preservation, development of cleaning supplies.
8. Demonstrate basic microbiological laboratory techniques for working with microorganisms.
9. Demonstrate the ability to apply microbiological laboratory techniques to study microorganisms.
10. Utilize current events in biology to generate responses regarding microbiological and ethical issues.
11. Analyze data for interpretation (ILO 2 – Critical Thinking).

Required Texts:

Parker, N., Schneegurt, M., Thi Tu, A., Lister, P., Foster, B.M. 2016. Microbiology. OpenStax.

Expected Student Contributions:

There are specific due dates for all assignments, quizzes, and exams in this course. These dates are listed on the Course Schedule. It is your responsibility to print out and follow these documents. I will send and post weekly announcements on the content be covering and assignments that are due. However, in this online environment it is critical that you assume responsibility for ***all*** the material presented in the course materials. If either the course materials or text material is not clear, please ask questions to clarify the information.

Course Materials – Desire 2 Learn (D2L):

Northland D2L portal: <https://nctc.learn.minnstate.edu>

Within D2L you can find all course materials and assignments for the semester. These are located under the Materials Tab (Content). The material is organized by module and follows the course schedule. The first module (Start Here) contains the syllabus, course schedule, textbook, and the first activity. Following the Start Here module are the four unit modules. Each unit module contains lecture material for the chapters within that unit, all linked assignments, exam study guide, and the exam. For each chapter there are two pdfs of lecture notes and short videos that cover core components of each chapter.

Grading:

Grades are based on the following items.

- During the first week of class, you will need to introduce yourself within Discussion tab within D2L. If you do not introduce yourself within the first week of class, you will be ***dropped from the class. All students are expected to treat each other with respect. Derogatory or foul language will not be tolerated within discussion and will result in a student being both barred and receiving a zero.***
- Exams will include lecture material only and will contain 100 points. The material covered in each exam is in the course schedule and in the exam study guide in D2L. ***All exams are available during specific dates and you will have 60 minutes to complete an exam.*** The exam will include both multiple choice and written response questions. ***Exam proctors are not required, and you may use your book and notes during the exam.***
- Chapter Quizzes cover material from each chapter and have specific due dates located within the Course Schedule. ***You may complete the quiz any time up to the due date.*** Each quiz contains 10 questions and is worth 20 points. There is no time limit to complete the quiz and you may use resources to aid in answering the quiz questions. ***The format for chapter quizzes will be multiple choice.***
- Labs serve to apply lecture information and/or to learn microbial structures. ***Each lab is completed within D2L.*** For each lab you will need to complete the associated activities by the due date (course schedule). Each lab should take approximately 2 hours to complete, but there is no time limit. As you work through the lab, follow the onscreen instructions to complete the activity. ***Each lab is worth 25 points.*** You can submit the labs anytime up to the schedule due date.

The final grade for the semester will be composed of the following:

Exams (4)	400 points
Chapter Quizzes (13)	260 points
Labs (9)	225 points
<u>Introduce yourself</u>	<u>10 points</u>
Total	895 points

Grades (%):	90-100	A
	80-89	B
	70-79	C
	60-69	D
	< 60	F

Late Assignment Policy:

It is expected that assignments will be submitted by the deadlines listed on the Course Schedule. Assignments that are submitted late will not receive credit unless you have made specific arrangements with me to make up the work. You can submit assignments at any time up to the published due date/time. It would be wise to submit assignments early rather than waiting until right before the deadline, in case of unexpected technological or other issues.

Make-ups:

Chapter Quizzes and Labs:

These activities can be made up with my approval, please contact me if a makeup is warranted.

Exams:

If you will miss an exam, you must notify me personally, through email, ***prior*** to the exam deadline. Makeup exams are to be completed within one calendar week from the scheduled deadline unless I have given prior approval of an extended due date.

Technology Tips:

Computers are used in the course for course communication, the submission of assignments, review of course material, and for taking quizzes and exams. You are advised to leave ample time for inevitable disasters such as a computer crash or failure. Computer failure is not an acceptable excuse for late work.

Technical Assistance:

I am limited in the amount of technical assistance I can provide. I can't fix your email or work with your Internet Service Provider. I do have a fair amount of computer knowledge, but what I can do remotely is limited. If you have technology-specific questions or problems, please post them in the Discussion area and I'll do my best to answer them or maybe one of the other students will be able to help. Other avenues of assistance:

- The IT departments on each of the college campuses do a great job of providing technical support for students. <http://www.northlandcollege.edu/about-northland/offices/technology/>
- If needed, headsets and webcams are available in the Northland Bookstore and can be charged to student accounts during the first week of class.
- For assistance with D2L specific questions, contact the Distance Minnesota office at 800-657-3930.

Students with Disabilities:

If you require adaptations for lectures or exams due to a disability, please inform me so that we can work together to accommodate you and make sure to contact the ***Academic Success Center (room 580D; phone: 218-683-8560; email sara.johnson@northlandcollege.edu)*** to fill out a Learning Services Support Plan. See the following websites for further information

<http://www.northlandcollege.edu/services/disability/>

http://www.northlandcollege.edu/about/policies/_docs/2035.pdf.

Statement of Diversity:

It is an integral part of Northland Community and Technical College's mission to acknowledge, understand, value and celebrate the diverse heritage, cultures and individuals within our learning environment and communities. The College views diversity as an essential component of the education experience of our students.

Academic integrity policy:

It is expected that all work submitted by a student will be that student's original work. The student code of conduct policy is located at the following website:

http://www.northlandcollege.edu/about/policies/_docs/3072.pdf.

Plagiarism, whether intended or not, is not tolerated in any academic setting. Students exhibiting questionable behavior during an exam will receive a zero for the exam. The use of generative artificial intelligence (AI), such as ChatGPT, is not allowed and submitted material from AI is your own work is prohibited. ***Questionable behavior during the semester will be confronted and may result in a report to the Dean of Academic Affairs and course failure.***

Course Schedule/Checklist

Week 1 – 1/8– 1/14 (Start Here Module)

- Download syllabus
- Access/Download Textbook
- Introduce yourself in the student lounge – due 11:59 pm 1/14

Unit 1 Material – 1/8 – 2/4

- Read Chapters 1,3,4, and download/view lecture materials
- Complete Chapter 1 Quiz – due 11:59 pm 1/21
- Complete Lab 1 – due 11:59 pm 1/21
- Complete Chapter 3 Quiz – due 11:59 pm 1/28
- Complete Lab 2 – due 11:59 pm 1/28
- Complete Chapter 4 Quiz – due 11:59 pm 2/4
- Complete Lab 3 – due 11:59 pm 2/4
- Complete Exam 1 – open from 12:00 1/29 to 11:59 pm 2/4
Covers material from chapters 1,3,4 (Study guide in D2L)

Unit 2 Material – 2/5 – 3/3

- Read Chapters 5,6,9,13, and download/view lecture materials
- Complete Chapter 5 Quiz – due 11:59 pm 2/11
- Complete Lab 4 – due 11:59 pm 2/11
- Complete Chapter 6 Quiz – due 11:59 pm 2/18
- Complete Lab 5 – due 11:59 pm 2/18
- Complete Chapter 9 Quiz – due 11:59 pm 2/25
- Complete Chapter 13 Quiz – due 11:59 pm 2/25
- Complete Exam 2 – open from 12:00 am 2/26 to 11:59 pm 3/3
Covers material from chapters 5,6,9,13 (Study guide in D2L)

Unit 3 Material – 3/11 – 4/7

- Read Chapters 14-16 and download/view lecture materials
- Complete Chapter 14 Quiz – due 11:59 pm 3/17
- Complete Lab 6 – due 11:59 pm 3/17

- Complete Chapter 15 Quiz – due 11:59 pm 3/24
- Complete Lab 7 – due 11:59 pm 3/24
- Complete Chapter 16 Quiz – due 11:59 pm 3/31
- Complete Exam 3 – open from 12:00 am 4/1 to 11:59 pm 4/7
Covers material from chapters 14-16 (Study guide in D2L)

Unit 4 Material – 4/8 – 5/5

- Read Chapters 17-19 and download/view lecture materials
- Complete Chapter 17 Quiz – due 11:59 pm 4/14
- Complete Lab 8 – due 11:59 pm 4/14
- Complete Chapter 18 Quiz – due 11:59 pm 4/21
- Complete Lab 9 – due 11:59 pm 4/21
- Complete Chapter 19 Quiz – due 11:59 pm 4/28
- Complete Exam 4 – open from 12:00 am 4/29 to 11:59 pm 5/5
Covers material from chapters 17-19 (Study guide in D2L)