

**NSG 309: Microbiology and Application to Health**

**Pre-Requisite(s)**

None, although a course in general biology or related course will be helpful.

**Co-Requisite(s)**

None.

**Credit Hours**

3 Credits

**Course Format**

Complete Online Course

**Meeting Days, Times, and Locations**

Fully online. No required in-class sessions.

**Course Description**

This online course focuses on principles of general microbiology and health care applications for students pursuing careers in nursing and other allied health fields. Emphasis is on microbiological fundamentals and control of microorganisms pertinent to the health care arena. Considerable attention is devoted to microorganisms and human disease, specifically principles of disease and epidemiology, pathogenicity, and immunology. Various diseases are presented according to the host organ system most affected. Emerging topics in microbiology are addressed along with their clinical application to health care.

**Student Learning Outcomes**

At the conclusion of this course, the student will achieve the following identified outcomes.

1. Discuss the concepts of microbiology including fundamentals of microbial anatomy, metabolism, growth, and genetics.
2. Differentiate the various antimicrobial methods and agents used to control microbial growth including techniques of sterilization, disinfection, and antisepsis as well as chemotherapeutic agents.
3. Examine principles of human disease, epidemiology, pathogenicity, and non-specific and specific immune responses.
4. Discuss the impact of microorganisms on the human biological system focusing on the host organ system most affected by various microorganisms.
5. Apply microbiological concepts to clinical scenarios in patient care.
6. Appraise current and emerging topics in microbiology and their relevance to health care.

**Teaching Methods/Activities**

This course uses a combination of methods to facilitate learning/mastery of content:

- Online lectures
- Online activities
- Required readings
- Selected web and literature searches
- Video streaming
- Practice questions
- Online testing
- The Mastering Microbiology website at [www.masteringmicrobiology.com](http://www.masteringmicrobiology.com) (optional)

**Online Activities and Expectations**

1. **Budget your time wisely!** Typically you will spend 9 hours per module on class activities for this online class. For a 3-credit class you are expected to:

- review the online lecture notes
- complete all assigned readings in the required text
- access and review online web resources
- submit the online test for each session

2. Online sessions will include lecture notes (supplemented with your readings in the required text), images, web resources, activities, and a test to be completed for each module.

3. The activities are not turned in to the instructor, nor graded. However, you are strongly urged to complete the activities to enhance your understanding of the material. Choose the activities that relate to the way you like to learn.

4. You are encouraged to complete the questions at the end of each chapter. Answers to the multiple-choice questions can be found in the back of your textbook. All of the answers to the questions can be found under the 'learning activities' folder in each session in the course. Although these exercises will not be submitted or graded, they will help you evaluate your understanding of the information in the text.

5. Online tests, although taken a place and time convenient for you, should be treated as a classroom-based examination experience. This means you should study prior to taking the examination and refrain from using study and lecture material during the test. You are strongly encouraged to use the study outline at the end of each required chapter for your studies.

6. All online tests include multiple-choice, true/false, and matching questions and must be submitted prior to the end of the course. Please NOTE: The online tests are timed according to the corresponding number of questions asked. The time limit will be clearly posted before you begin testing. You may access the test only once. Looking through your textbook while taking the test is cheating. As an adult learner you must realize that you will ultimately only be cheating yourself!

7. Questions about the course or content should be emailed to the course facilitator, **Brenton Petterson, at [brenton\\_petterson@urmc.rochester.edu](mailto:brenton_petterson@urmc.rochester.edu)**

### Evaluation Methods/Learning Outcomes

Course Requirement	Percent of Total Grade	Alignment with Student Learning Outcome(s)
1. Online tests	100%	SLO 1, 2, 3, 4, 5, & 6

The final grade entered is based on School of Nursing grading system. See *Student Handbook page 22* (<https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf>)

Online tests are 100% of final grade. Each test is worth 7.14% of your grade

### Grading System (for Undergraduate Programs)

The student's final numerical grade will be converted to a letter grade based on the following University of Rochester undergraduate student grading criteria:

A	93-100	C	73-76	"C-" is considered unsatisfactory work for undergraduate students; see <i>Student Handbook</i> for implications.
A-	90-92	C-	70-72	
B+	87-89	D+	67-69	Failing grade; see <i>Student Handbook</i> for implications.
B	83-86	D	63-66	
B-	80-82	D-	60-62	
C+	77-79	E	<60	

### **Required Textbook(s)**

Tortora, G., Funke, B., & Case, C. (2019). *Microbiology: An introduction* (13<sup>th</sup> ed.). San Francisco, CA: Pearson Benjamin Cummings.

Permission has been granted from the publisher, Pearson Benjamin Cummings, to use instructor available materials and images in this online course per agreement to use the above textbook for this course.

**PLEASE NOTE: The Tortora textbook is required for class activities, readings, and as a supplement to the online lectures!**

### **Recommended Textbook(s)**

The textbook can be purchased with or without access to the publisher's website. Access to "masteringmicrobiology.com" is an extra cost, whether purchased with the textbook or as an additional purchase from <http://www.masteringmicrobiology.com/site/register/new-students.html>. It is your choice whether to purchase this access or not. There are no course assignments or tests that require you to have access to this website, and there are many educational resources included in this course. However, there are additional, useful resources included at Mastering Microbiology that can help reinforce your understanding of the material. You can also purchase the e-text along with access to the "masteringmicrobiology.com" web site from <http://www.pearsonmylabandmastering.com/northamerica/masteringmicrobiology/students/get-registered/index.html>

### **Course Outline**

**Module One:** Introduction to Microbiology & Classification

**Module Two:** Microscopy Prokaryotic Cell Structure & Function

**Module Three:** Prokaryotic Cell Structure & Function

**Module Four:** Microbial Metabolism

**Module Five:** Microbial Growth

**Module Six:** Microbial Genetics

**Module Seven:** Control of Microorganisms and Antimicrobial Drugs

**Module Eight:** Principles of Disease and Epidemiology, Microbial Mechanisms of Pathogenicity, Focus on Antimicrobial Resistance and Emerging Resistant Microorganisms

**Module Nine:** Non-Specific Host Defenses and Specific Host Defenses

**Module Ten:** Practical Applications of Immunology, Focus on Immunological Modifying Agents, and Disorders of the Immune System

**Module Eleven:** Viruses, Focus on Anti-viral agents, Microbial Diseases of the Skin and Eyes

**Module Twelve:** Infectious Diseases of the Nervous System, Focus on Biological Agents in the Public Health Arena

**Module Thirteen:** Microbial Diseases of the Cardiovascular and Lymphatic System, Microbial Diseases of the Respiratory System

**Module Fourteen:** Microbial Diseases of the Digestive System, Microbial Diseases of the Urinary and Reproductive System, Focus on Vaccinations for Sexually Transmitted Microbes

**ADA Statement and Holidays**

See *Student Handbook* (<https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf>)

**Academic Honesty Statement**

Students are responsible for their own work. Students are expected to have read and to practice principles of academic honesty. See *Student Handbook* (<https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf>)  
Student attestation is completed on Blackboard for each course.

**Professional Behavior/Civility Statement**

The University of Rochester, School of Nursing (SON) seeks to provide an environment for learning and teaching that is respectful of diverse persons and points of view in all classroom, electronic, and clinical settings. Consistent with this goal, it is expected that diverse perspectives and opinions will be expressed and received in a respectful and professional manner. Incivility, intolerance, hate speech, and abusive behaviors are considered professional misconduct and will be acted upon in accordance with the statement in the *Student Handbook*. (<https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf>)

**Sexual Harassment Policy**

Students are to abide by the University of Rochester Student Sexual Misconduct Policy which can be found in the *Student Handbook* (<https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf>). Faculty review policy in all face-to-face classes.

**HIPAA Compliance**

Students are to abide by the University of Rochester HIPAA Compliance Guidelines which can be found on the SON website (<http://son.rochester.edu/r/HIPAA-Video>).