

COURSE SYLLABUS

Course Title: Microbiology

Course #: Bio 235

Course Description: This course focuses on structure, classification and physiology of microorganisms. Infection, immunity and the control of microorganisms are emphasized. The role of microorganisms in the environment and economy are also discussed. Laboratory exercises include an emphasis on sterile techniques, Biochemical analysis, specimen handling and sampling and the identification of unknowns.

Pre-requisite: General Biology 1(Bio 121) or Human Biology (Bio 115) with a “C” or better

Objectives:

The goal of this course is to provide an understanding of microorganism and the role they play in health and disease.

Outcomes: Upon completion of this course a student should be able to:

- Compare the theories of spontaneous generation and biogenesis.
- Describe the germ theory of disease and Koch’s postulate
- List the major groups of organisms studied in microbiology
- Explain the basic principles of biological chemistry and their relevance to living things
- Compare and contrast prokaryotic and eukaryotic cells in terms of structures , functions and chemistry
- Explain the principle mechanisms of metabolism including aerobic and anaerobic respiration, fermentation as well as the synthesis of macromolecules
- Compare aerobic and anaerobic respiration
- Describe the difference between Gram + and Gram - cells
- Describe the mechanisms of enzyme action and inhibition
- List the chemical and physical requirements for microbial growth and explain how these are used to classify microorganisms
- Describe the actions of antimicrobial agents
- Identify physical and chemical methods of microbial control
- Describe the processes of DNA replication and protein synthesis
- Explain the role of plasmids and genetic transfer in antibiotic and chemical resistance
- Identify medically important groups of microorganisms
- Identify the methods of disease transmission
- Explain the importance of epidemiology and the use of DNA fingerprinting to identify sources of contamination
- Explain the role of normal flora

- Describe the principles of disease and mechanisms of pathogenicity
- Identify and discuss the roles of specific and non specific host defenses
- Identify major diseases caused by microorganisms
- Explain the role of microorganisms in the environment

A student successfully completing the microbiology laboratory should be able to:

1. Use a light microscope to view and interpret slides
2. Properly prepare slides for microbiological examination

3. Perform simple and differential staining techniques including Gram stains
4. Properly use aseptic techniques for the transfer and handling of microorganisms and instruments, including:
 - a. Sterilizing and maintaining sterility of transfer instruments
 - b. Performing aseptic transfer
 - c. Obtaining samples
5. Use appropriate microbiological media and test systems, including
 - a. Isolating colonies
 - b. Maintaining pure cultures
 - c. Using biochemical test media to identify organisms
 - d. Accurately recording macroscopic observations
6. Estimate the number of microbes in a sample using serial dilution techniques
7. Use standard microbiology laboratory equipment correctly
8. Perform and analyze biotechnological tests including bacterial transformations and DNA fingerprinting.
9. Perform and analyze immunological tests including ELISA and Western Blot.

College Policies

Plagiarism: Plagiarism and Academic Dishonesty are not tolerated at Northwestern Connecticut Community College. Violators of this policy will be subject to sanctions ranging from failure of the assignment (receiving a zero), failing the course, being removed/expelled from the program and/or the College. Please refer to your “Student Handbook” under “Policy on Student Rights,” the Section entitled “Student Discipline,” or the College catalog for additional information.

Americans with Disabilities Act (ADA): The College will make reasonable accommodations for persons with documented learning, physical, or psychiatric disabilities. Students should notify Dr. Christine Woodcock, the Counselor for Students with Disabilities. She is located at Green Woods Hall, in the Center for Student Development. Her phone number is 860-738-6318 and her email is cwoodcock@nwcc.edu.

School Cancellations: If snowy or icy driving conditions cause the postponement or cancellation of classes, announcements will be made on local radio and television stations and posted on the College’s website at www.nwcc.edu. Students may also call the College directly at **(860) 738-6464** to hear a recorded message concerning any inclement weather closings. Students are urged to exercise their own judgment if road conditions in their localities are hazardous.

Use of Electronic Devices: Some course content as presented in Blackboard Learn is not fully supported on mobile devices at this time. While mobile devices provide convenient access to check in and read information about your courses, they should not be used to perform work such as taking tests, quizzes, completing assignments, or submitting substantive discussion posts.

Sexual Assault and Intimate Partner Violence Resource Team: NCCC is committed to creating a community that is safe and supportive of people of all gender and sexual

identities. This pertains to the entire campus community, whether on ground or virtual, students, faculty, or staff.

Sexual assault and intimate partner violence is an affront to our national conscience, and one we cannot ignore. It is our hope that no one within our campus community will become a victim of these crimes. However, if it occurs, NCCC has created the SART Team - Sexual Assault and Intimate Partner Violence Resource Team - to meet the victim's needs.

SART is a campus and community based team that is fully trained to provide trauma-informed compassionate service and referrals for comprehensive care. The team works in partnership with The Susan B. Anthony Project to extend services 24 hours a day, 7 days a week throughout the year.

The NCCC team members are:

Ruth Gonzalez, Ph.D.	860-738-6315	Green Woods Hall Room 207
Susan Berg	860-738-6342	Green Woods Hall Room 223
Kathleen Chapman	860-738-6344	Green Woods Hall Room 110
Michael Emanuel	860-738-6389	Founders Hall Annex Room 308
Seth Kershner	860-738-6481	Library
Jane O'Grady	860-738-6393	Founders Hall Annex Room 212
Robin Orloski	860-738-6416	Business Office Room 201
Patricia Bouffard, Ex-Officio	860-738-6319	Founders Hall Room 103
Savannah Schmitt		Student Representative

At NCCC we care about our students, staff and faculty and their well-being. It is our intention to facilitate the resources needed to help achieve both physical and emotional health.