

**NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE**  
**COURSE SYLLABUS**

**Course Title:** Principles of the Human Body

**Course #:** BIO\* 110

**Course Description:** 3 semester hours (3 lecture hours). This course is a non-majors course designed to introduce students to basic principles required to support human life. The cellular nature of life and organization and function of organs and organ systems is emphasized. In addition to the textbook, students use a variety of resources from traditional print to electronic media to acquire and evaluate relevant scientific content. Selected body systems and disease states are discussed. This course cannot be used as the prerequisite for BIO\* 211, BIO\* 235, or VET\* 201.

**Pre-requisite:** Eligibility for, or completion of, ENG\* 101. Computer skills, including email, word processing, and web navigation **are critical** for this course.

**Goals:** The goal of this course is to introduce students to biological principles as they apply to the human body, to introduce students to the structure and function of selected systems of the human body, to develop the ability to gather and read scientific content from a variety of sources and evaluate it as an information source, to understand the biological basis of selected disease states.

**Outcomes:** Upon the completion of this course, students should be able to:

- a. Evaluate scientific information sources and specific health claims.
- b. Apply principles of scientific method to specific examples.
- c. Describe the basic chemical basis of life, including atoms, molecules, bonding, pH, and properties of water.
- d. Explain the relationship between monomers and polymers and describe the structure and function of carbohydrates, proteins, lipids, and nucleic acids.
- e. Describe the basic structure and function of eukaryotic cells, including the various organelles, cytosol, and cell membranes.
- f. Recognize and identify the structure and function of a variety of tissue types, including epithelial, muscle, nervous, and connective.
- g. Recognize the various methods of transportation of substances across the cell membrane and predict the results exposure of cells to different tonicities.
- h. Discuss the importance and mechanism of homeostasis and relate this process to thermal control in humans.
- i. Compare and contrast the processes of mitosis and meiosis.
- j. Demonstrate the basic principles of genetics as they apply to humans, including inheritance, (co)dominance/recessiveness, multiple alleles, multifactorial traits, polygenics, nondisjunction, sex-linked traits, and common genetic disorders.
- k. Explain the process of DNA replication and identify the importance of DNA technology, including the Human Genome Project.
- l. Describe the basic process of carcinogenesis in various parts of the human body, including symptoms, treatment, and avoidance.
- m. Identify structure and functional components of a variety of body systems including but not limited to:
  - **Integumentary:** the basic structure and function of skin; the role of skin in homeostasis.
  - **Musculoskeletal:** the basic structure and function of bones, including the various types; the role of bones and muscles in homeostasis; the bones of the axial and appendicular skeletons; the structure and function of different types of joints, with specific emphasis on the synovial joint of the knee; the structure and function of the three types of muscle tissue; the sarcomere unit of a muscle; terminology of muscle action.

- **Nervous:** the structure of a neuron and neuroglial cells; the role of the nervous system in homeostasis; the affector and effector functions of the nervous system including important neurotransmitters and the reflex arc; the action potential; the difference between the central and peripheral nervous systems, the difference between the sympathetic/parasympathetic and autonomic/somatic nerve actions; the basic structure of the brain, including meninges, hindbrain, forebrain, midbrain, with special emphasis on the cerebrum.
  - **Sensory:** the different types of sensory receptors; basic somatic sensations; the structure and function of the special sense organs, with emphasis on the ear/hearing/balance and the eye/sight.
  - **Cardiovascular:** the structure and function of the cardiovascular system, including vessels, with a special emphasis on the heart; the role of the cardiovascular system in homeostasis; the composition and function of blood, including the various cell types and their origins; blood types; the basic mechanism of clotting.
  - **Immune:** the basic body defenses against pathogens; the types of pathogens to which humans are most susceptible; the process of adaptive immunity; the results of a failed immune system; patterns of infectious disease and methods of prevention.
  - **Respiratory:** the basic structure and function of the respiratory system; the role of the respiratory system in homeostasis; the primary process of gas exchange; controls of breathing and respiration.
  - **Digestive:** the basic structure and function of the digestive system; the role of the digestive system in homeostasis; the principle of nutrition and its relation to body weight; relating consumption of nutrients and daily exercise to weight control.
  - **Endocrine:** the origin and role of hormones in the body; the role of the endocrine system in homeostasis; the glands and organs of the endocrine system and their importance; the feedback mechanisms for hormone control.
  - **Urinary:** the structure and function of the urinary system; the role of the urinary system in homeostasis; the process of diffusion and osmosis in regulating the urinary system; the basic formation of urine, including the steps of filtration, reabsorption, and secretion.
  - **Reproductive systems:** the basic structure and function of the male and female reproductive systems; the hormones involved in regulating the male and female reproductive systems; the process of spermatogenesis and oogenesis; the ovarian cycle; the process of sexual intercourse and fertilization; methods of enhancing or limiting fertility; specific sexually transmitted diseases, including symptoms and methods of avoidance.
- n. Identify basic integration of the body systems above with one another.
- o. Discuss the biological basis of selected disease states, symptoms, and current methods of treatment for each of the body systems above.

## **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](mailto: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](http://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.