

NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE

COURSE SYLLABUS

Course Title: Cell Biology and Organ Systems Lab

Course #: BIO* 127

Course Description: This laboratory component provides students with the opportunity to view tissues, organs and structures and systems on a microscopic and macroscopic basis demonstrating concepts in class. It permits an opportunity to provide to explore topics in more depth after being covered in lecture. 0 credits

Pre-requisite/Co-requisite: Eligibility for ENG 101

Goals: To provide students with experiments and activities to reinforce basic biological principles including basic chemistry, cellular structure, genetics, and protein synthesis. To develop proficiency with the compound light microscope and scientific method. To introduce students to basic histology of tissues and organs as well as examples of microscopic examples of various pathological conditions. To introduce concepts of blood typing and transfusion. To introduce students to specific examples of diagnostic tests including X-ray, CT scan and MRI. To view organs and organ systems using computer dissection and specimen dissection.

Outcomes: At the end of this laboratory course component, student will be able to:

- Identify and explain the steps of the scientific method
- Identify and explain experiments involving chemical biological principles including diffusion and osmosis, pH, and enzyme activity
- Discuss the steps of protein synthesis when given a nucleotide sequence from DNA and explain the effect of a point mutation and frame shift mutation
- Explain basic genetic principles of human inheritance when given the genotypes for the parents and predict the phenotype and genotype probabilities for their children through examination of autosomal dominant traits, autosomal recessive traits, and sex-linked traits
- Identify examples of tissues from prepared slides including multiple examples of the four tissue types and selected examples of subtypes for each
- Recognize and discuss the structures found in the skin from prepared slides and explain selected skin pathologies including melanoma, squamous cell and basal carcinomas
- Identify selected bones and muscles
- Recognize the parts of a synovial joint in a chicken leg and a model of the knee – recognize evolutionary conservation of structure
- Recognize the parts of a pig's brain and a human brain model and explain their functions
- Recognize and understand functions of the parts of the eye and ear
- Keep a nutritional and activity log
- Calculate their own Basal Metabolic Rate (BMR), Kilocalories (Kcals) expended for each day for physical activities
- Compare their own Kilocalorie intake to their Kcals that have been expended for BMR plus physical activities and make recommendations to improve over all nutrition using the food pyramid

- Recognize histology slides, dissection specimen and model organs and structures for each system including, nervous, respiratory cardiovascular, urinary, endocrine, and reproductive systems