

CUMBERLAND COUNTY COLLEGE

Course: BI 201 Genetics

Credits: 3

Prerequisites: BI 101 or CH 101

Description:

This course focuses on the principles of transmission and molecular genetics with an emphasis on human genetics.

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- Describe Mendelian genetics and the major advances in genetics during the 21st century.
- Characterize cell structure and differentiate between mitosis and meiosis.
- Apply Mendel's laws to single and double trait.
- Characterize sex determination and sex chromosomes in human reproduction.
- Differentiate the different types of chromosome mutations and anomalies.
- Describe gene linkage and chromosome mapping in eukaryotes and prokaryotes.
- Discuss DNA structure and demonstrate an understanding of how it can be analyzed.
- Describe how DNA can mutate and the various ways in which it can be repaired.
- Discuss the regulation of gene expression and cell-cycle.
- Describe and characterize recombinant DNA technology.
- Use the scientific method of inquiry, through the acquisition of scientific knowledge.
- Use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Topical Outline:

- Introduction to Genetics
- Review of Cell Biology
- Mitosis and Meiosis
- Mendelian Genetics
- Modifications of Mendelian Ratios
- Linkage and Chromosome Mapping
- Sex Chromosomes: Sex Determination and Aneuploidy
- Aneuploidy and Chromosome Mutations in Autosomes
- DNA structure and Analysis
- DNA replication and Synthesis
- The Genetic Code and Transcription
- Translation and Proteins
- Gene Mutations, DNA repair, and Transposition
- Regulation of Gene Expression
- Cell-Cycle Regulation and Cancer

- Recombinant DNA Technology
- Genomics and Proteomics

Text:

Essentials of Genetics, W.S. Klug, M.R. Cummings and C.A. Spencer, Sixth Edition, 2007.

Academic Integrity:

Plagiarism is cheating. Plagiarism is presenting in written work, in public speaking, and in oral reports the ideas or exact words of someone else without proper documentation.

Whether the act of plagiarism is deliberate or accidental [ignorance of the proper rules for handling material is no excuse], plagiarism is, indeed, a “criminal” offense.

As such, a plagiarized paper or report automatically receives a grade of **ZERO** and the student may receive a grade of **F** for the semester at the discretion of the instructor.

Tutoring & Project Assist:

If you are having difficulty with work in this class tutoring is available through the Center for Academic & Student Success. If you think that you might have a learning disability, contact Project Assist at 856.691.8600 x1282 for information on assistance that can be provided to eligible students.

Before Withdrawing From This Course:

If a student experiences adverse circumstances while enrolled in this course and considers withdrawing, s/he should see an advisor (division or advisement center) **BEFORE** withdrawing from the class. A withdrawal may cause harmful repercussions to completion rate standards and overall GPA, which can limit or eliminate future financial aid in addition to causing academic suspension.