

## **BIO 250 GENETICS**

### **COURSE DESCRIPTION:**

Prerequisites: BIO 112

Corequisites: None

This course covers principles of prokaryotic and eukaryotic cell genetics. Emphasis is placed on the molecular basis of heredity, chromosome structure, patterns of Mendelian and non-Mendelian inheritance, evolution, and biotechnological applications. Upon completion, students should be able to recognize and describe genetic phenomena and demonstrate knowledge of important genetic principles. *This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a premajor and/or elective course requirement.*  
Course Hours Per Week: Class, 3; Lab, 3; Semester Hours Credit, 4

### **OUTLINE OF INSTRUCTION:**

- I. DNA
  - A. Structure
  - B. Replication
- II. Gene Control of Proteins
  - A. Transcription
  - B. Translation
- III. DNA Mutations
  - A. DNA Damage
  - B. DNA Repair
  - C. Transposable elements
- IV. Recombinant DNA Technology
- V. Gene Cloning and Manipulation
- VI. Genomics
- VII. Mendelian Genetics
- VIII. Chromosomes and Heredity
- IX. Bacteria and Phage Genetics
- X. Regulation of Gene Expression in Bacteria and Phage
- XI. Regulation of Gene Expression in Eukaryotes

- XII. Developmental Genetics
- XIII. Genetics of Cancer
- XIV. Non-Mendelian Inheritance
- XV. Population Genetics
- XVI. Molecular evolution

**REQUIRED TEXTBOOKS:**

Russell, P. J. iGenetics: A molecular approach. 2<sup>nd</sup> ed. San Francisco: Pearson Education, Inc., publishing as Benjamin Cummings, 2006.

**SUGGESTED REFERENCES, PERIODICALS, AND VISUAL AIDS:**

Numerous supplementary texts, programmed materials, and audiovisual packages are available in the Educational Resources Center. These materials may be utilized to reinforce the lecture and lab material or to provide material for independent study by the student.

**STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.