

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: BIO 256

Credits: 4

Course Title: General Genetics

Course Description: Explores the principles of genetics ranging from classical Mendelian inheritance to the most recent advances in the biochemical nature and function of the gene. Includes experimental design and statistical analysis. Prerequisite: BIO 101, BIO 102, CHM 111, and CHM 112. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

General Course Purpose: This course covers the basic content and specific laboratory techniques of an introductory, college-level general genetics class. This course can be used to satisfy a laboratory science requirement for the Science AS degree.

Course Prerequisites and Co-requisites:

Prerequisite: BIO 101, BIO 102, CHM 111, and CHM 112

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Explain the chromosomal theory of inheritance;
- b. Demonstrate an understanding of the concepts of Mendelian and non-Mendelian inheritance by solving genetics problems;
- c. Describe the effects of gene regulation and genetic mutation on the development of genetic disease/disorders;
- d. Describe inheritance patterns and their association to population genetics;
- e. Explain major methods and techniques used in molecular genetics to isolate, recombine, amplify, find, and study genes of interest;
- f. Discuss the ethical, legal, and social implications of genetics;
- g. Analyze and interpret data using a variety of methods, including statistical analysis; and
- h. Demonstrate the ability to maintain a laboratory notebook using industry standards.

Major Topics to Be Included:

- a. Transmission genetics
- b. Cytogenetics
- c. Molecular genetics
- d. Population genetics

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