

March 2006

Course Name: Laboratory in Genetics

Prefix and Number: BIO 241

Credit and Contact Hours: 1 credit hour – 3 contact hours

Catalog Description: A laboratory offering to compliment BIO 240. This course provides a variety of laboratory experiences including classical, morphological, and molecular genetics. Corequisite or Prerequisite: BIO 240.

II. Course Outcomes and Objectives

Learning Outcomes: The basic objective of this course is to provide laboratory experiences in genetics. Students will gain experience in genetics laboratory techniques. Students will become familiar with DNA isolation procedures, transformation techniques, basic cloning processes, PCR amplification, bacterial conjugation and restriction enzyme use. Students will also be introduced to classical genetics experiments with fruit fly crosses and chi square analyses.

College competencies addressed by the course: Writing, Reading, Problem Solving

III. Methods of Instruction

Types of Course Materials: Lab handouts

Methods of instruction: Three hours of laboratory per week

Assessment measures: Longitudinal assessment of student performance on tests, homework, labs, project work, journals; Classroom Assessment Techniques

Methods of Evaluation: Laboratory quizzes, laboratory report evaluations

IV. General Outline of Topics covered

Chromosomal DNA preps and agarose gels

Plasmid preps

Transformation experiments

Restriction enzyme digests

DNA fingerprinting

Cloning DNA

The Lac operon and blue white selection

Beta-galactosidase assays

Fruit fly crosses

Human genetic diseases
Conjugation experiments
Polymerase chain reaction
Population genetics
Cancer genetics