I. Course Name: Electrophoresis
Prefix and Number: BIO 283/CHM 263
Credit Hours and Contact Hours: 2 credit hours – 2 contact hours
Catalog Description: A laboratory module introducing the student to polyacrylamide and agarose gel electrophoresis. Seven weekly laboratory exercises (3 hours each). Prerequisite: BIO 121 or permission of instructor.

II. Course Outcomes and Objectives

Learning Outcomes: This course introduces students to the process of protein electrophoresis using SDS-PAGE and to the process of DNA electrophoresis using agarose gels. Students must develop a working understanding of setting up gels and using them to carry out advanced experiments. Additionally they must be able to carry out blotting procedures including western blots and southern blots. As a writing intensive course, students are expected to improve their writing in formal lab reports as well as in laboratory notebook documentation. Finally, students must become familiar with the process of scientific manuscript submission and peer review.

College competencies addressed by the course: Writing, Reading, Mathematics, Computer Literacy, Professional Competency, and Problem Solving.

III. Methods of Instruction

Types of Course Materials: Handouts and lab book.

Methods of instruction: Four hours of laboratory once a week over seven weeks.

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

Methods of Evaluation: Examination, homework assignments, laboratory examinations, laboratory report evaluations, laboratory notebook documentation, laboratory journal.

IV. General Outline of Topics covered

Polyacrylamide Gel Electrophoresis Principles
Polyacrylamide Gel Electrophoresis Equipment and Set Up
Pipetting
Staining & Photography
Standard Curves
Protein Purification
Western Blotting
Agarose Gel Electrophoresis Principles
Agarose Gel Electrophoresis Equipment and Set Up
Restriction Mapping
Gel Purification
Plasmids and Cloning
Southern Blotting
Manuscript Drafting, Submission and Peer Review