Course Syllabus

Department: Science and Technology

Date: 10/24/13

I. Course Prefix and Number: BIO283

   Course Name: Electrophoresis

   Credit Hours and Contact Hours: 1 credit hours – 1.5 contact hours (3 hours/ ½ semester)

   Catalog Description including pre- and co-requisites: A laboratory module introducing the student to polyacrylamide and agarose gel electrophoresis. Seven weekly laboratory exercises (3 hours each). Prerequisite: BIO 121

   Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:

       This course is a required course for the A.S. Biotechnology degree. This course may also be taken as an elective for students outside of biotechnology program.

II. Course Student Learning Outcomes:

Upon completion of this course, the participant will be able to:

1. Demonstrate an understanding of the concepts of polyacrylamide gel and agarose gel electrophoresis.

2. Utilize lab protocols to carry out common electrophoresis and blotting procedures.

3. Write a lab report utilizing instructions for preparation of a journal manuscript.

4. Prepare written lab reports that include an evaluation and presentation of laboratory results.

College Learning Outcomes Addressed by the Course: (check each College Learning Outcome addressed by the Student Learning Outcomes)

☒ writing
☐ oral communications
☐ reading
☒ computer literacy
☐ ethics/values
☐ citizenship
III. Assessment Measures (Summarize how the college and student learning outcomes will be assessed):

<table>
<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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<tbody>
<tr>
<td>Writing</td>
<td>Students will generate a laboratory report as part of a manuscript writing and journal submission activity.</td>
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<tr>
<td>Mathematics</td>
<td>Students will apply mathematics principles in order to prepare laboratory reagents. Lab exams, laboratory reports and a lab notebook will assess student mastery of these concepts.</td>
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<td>Critical Thinking</td>
<td>Students will maintain accurate records and critically analyze the results of their experiments.</td>
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<tr>
<td>Computer Literacy/Information Resources</td>
<td>Students will access and utilize scientific resources and instructions for authors in order to generate their own manuscript. The manuscript will include computer generated figures and tables to accurately report their data.</td>
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IV. Instructional Materials and Methods

Types of Course Materials:

- Lab book: written and organized by course coordinator
• Current materials/topics from additional handouts, articles and online resources

Methods of Instruction (e.g. Lecture, Lab, Seminar …):

• Lecture, group and online activities, and hands-on laboratory experiences

V. General Outline of Topics Covered:

Polyacrylamide Gel Electrophoresis Principles
Polyacrylamide Gel Electrophoresis Equipment and Set Up
Pipetting and micropipetting
Gel Staining & Photography
Standard Curves
Western Blotting
Agarose Gel Electrophoresis Principles
Agarose Gel Electrophoresis Equipment and Set Up
Restriction Enzymes
Southern Blotting
Journal Manuscript Drafting, Submission and Peer Review