Administrative Unit: Science Department

Course Prefix and Number: BIOL 390L

Course Title: Cell Biology Laboratory

Number of Credit Hours: 2 
Lecture Hours: 0 
Laboratory Hours: 2

Catalog Description: Laboratory experiences to complement BIOL 390. $20 lab fee. Prerequisites: BIOL 110L; BIOL 390 or concurrent enrollment. Offered odd Fall.

Prerequisite(s)/Corequisite(s): BIOL 110L; BIOL 390 or concurrent enrollment

Text(s): Experimental procedures may be taken from texts such as:

- Cell Biology Online Laboratory Manual, Heidcamp (Gustavus Adolphus College, 1996).

Course Objectives:
- To demonstrate facility with a variety of current laboratory techniques in cell biology using exercises that complement and extend topics covered in BIOL 390 lectures.

Measurable Learning
- Perform all techniques using basic lab safety procedures
- Demonstrate proper use of equipment including micropipettors, spectrophotometers, ultracentrifuges, electrophoresis equipment, PCR thermocyclers, electroporation machines
- Perform subcellular fractionation and successfully isolate different types of subcellular organelles
- Confirm purity of organelle fractions by performing specific metabolic labeling experiments
- Use a cell counting chamber to determine numbers of cells in different samples
- Correctly calculate serial dilutions of cells
- Use light microscopes to determine cell types, presence and localization of particular subcellular organelles and/or biological molecules
Analyze the cell cycle
Characterize specific cellular proteins
Interpret data and draw conclusions using critical analytical skills
Write lab reports based on the format followed in scientific journals

Topical Outline (major areas of coverage):
- Basic lab safety and techniques
- Proper use of equipment
- Microscopy and cell staining
- Cell counting and serial dilutions
- Ultracentrifugation and subcellular fractionation
- Isolation and characterization of organelles
- Cell cycle analysis
- Characterization of cellular proteins
- Metabolic labeling

Material from this course may be tested on the Major Field Test (MFT) administered during the Culminating Experience course for the degree.

Recommended maximum class size for this course: 15

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

Prepared by: Julie Estabrooks
Date: September 21, 2005

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

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