

GEORGIA PERIMETER COLLEGE
DIVISION OF SCIENCE
COMMON COURSE OUTLINE
REVISION DATE: September 2002

COURSE ABBREVIATION	BIOL 1402L
CREDIT HOURS	1 Semester Hour
COURSE TITLE	CELL BIOLOGY AND GENETICS LABORATORY
PREREQUISITES	Exit or exemption from Learning Support English, reading and ESL requirements.
COREQUISITE	BIOL 1402.

CATALOG DESCRIPTION

This laboratory investigates principles and applications of cell biology. Topics include laboratory exercises in the scientific method, cell structure and function, cell division, gene structure and function, and genetics. This course is designed for non-science majors.

EXPECTED EDUCATIONAL RESULTS

As a result of completing this course, the student will be able to:

1. Apply the scientific method and procedures to investigate a question, analyze data, and arrive at a conclusion.
2. Use laboratory skills and techniques such as microscopy, measurement, analysis of cell chemistry, and graphing techniques.
3. Use observational skills that allow them to identify and diagram characteristics of cells based on examples provided by living organisms, models, and prepared microscope slides.
4. Apply principles of classical genetics to laboratory investigations.

GENERAL EDUCATION OUTCOMES

- I. This course addresses the general education outcome relating to communications as follows:
 1. Students develop their reading comprehension skills by reading the laboratory manual and handout materials. Students are required to communicate their understanding of subject matter by responding in a literate fashion to questions on exams and study materials.
 2. Students develop their listening skills through pre-lab introduction and small group discussion.
 3. Students develop their reading and writing skills through the laboratory reports and

maintaining a lab notebook. They must also respond to short-answer and completion type questions on course examination.

- II. This course addresses the general education outcomes of mathematical concept usage and applies the scientific method as follows:
 1. Students apply the scientific method in the formulating of questions, the elucidation of a hypothesis and the design of experiments.
 2. Students must apply mathematical concepts in the solution of genetic problems provided to demonstrate the laws of genetics and the prediction of outcomes of genetic crosses.
 3. Students graph and analyze data obtained by experimentation.

COURSE CONTENT

- I. Scientific Method
- II. Basic Chemistry of Macromolecules
- III. Cell Structure and Function
 - A. Differences and similarities of prokaryotic and eukaryotic cells
 - B. Cell structures
 - C. Cell function
- IV. The Cell's Enzymatic Activity
 - A. Enzyme-substrate activity
 - B. Factors affecting enzyme activity
- V. Cell Respiration
 - A. Fermentation
 - B. Aerobic Cellular Respiration
- VI. Photosynthesis
 - A. Chloroplast structure and plant pigments
 - B. Relationship of light to photosynthetic carbohydrate formation
 - C. Relationship of carbon dioxide to carbohydrate formation
- VII. Mitosis and Meiosis
- VIII. Mendelian Genetics
 - A. Monohybrid crosses
 - B. Dihybrid crosses
 - C. X-linked crosses

ASSESSMENT OF EXPECTED EDUCATIONAL RESULTS

A. COURSE GRADE

1. Lab practical examinations at mid-term and final will be prepared by each individual instructor to determine the course grade
2. Instructors may choose to use lab reports, lab quizzes, computer assignments and laboratory drawing to determine course grade.

B. DEPARTMENTAL ASSESSMENT

Biol 1402L will be assessed by regular consultation between instructors and other members of the Transfer Biology Committee.

An assessment test will be administered to all students enrolled in Biol 1402L every five years. Portfolio assessment of students' writing on final exams may be included in the assessment process.

USE OF ASSESSMENT FINDINGS

Instructors will consult the assessment results and each other to determine which educational approaches are working well, and which could be improved. They will continue what works and explore improved approaches to instruction where that is needed.

EFFECTIVE DATE: August 2002

APPROVAL DATE: September 2002

REVIEW DATE: April 2005