

ALICE LLOYD COLLEGE
COURSE OUTLINE

Course Number and Title: Biol 305 Genetics

Instructor: Robert G. Hamilton, Ph.D.
Andersen Science Center 113
Phone: (606) 368-6089
e-mail: roberthamilton@alc.edu
Office Hours: posted at office door

Prerequisite(s): Biol 205, 206 or permission of instructor. Mat 250 recommended.

Course Description:

BIOL 305 Genetics. 4 credit hours

An introduction to basic principles of heredity and variation in plants and animals, including classical, molecular, biochemical and population genetics. The physical and chemical basis of heredity are stressed and applications of genetics to problems of medicine, agriculture and evolution are examined. Three lecture hours and two laboratory hours.

Objectives of the Course:

To familiarize the student with the science of Genetics. Students will learn how our knowledge of genetics has evolved and is applied in modern science. .

The information presented during this course will be focused on specific problems. Students will be required to synthesize information into written and oral responses to key problems presented during the course as a means of developing abilities to effectively integrate and communicate information regarding science related topics.

Requirements for the Course:

Students will be required to:

1. attend scheduled class lectures, take all exams and quizzes, and complete all written assignments.
2. read regularly the assigned text material and associated supplementary readings.
3. demonstrate an understanding of the science of genetics.
4. demonstrate the ability to integrate knowledge into an understanding of genetics.
5. participate in group tasks, oral discussions, and individual efforts as apply to the responsive questions and critical-thinking tasks.

Technology:

Students will be encouraged to access on-line resources and websites that supplement their class lecture and laboratory readings. Students will use technologies like PCR and use online sources for the analysis of data.

Writing Across the Curriculum:

This course will employ opportunities for students to display their verbal and written skills. Several essay questions will appear on exams, and other work, especially problem sets, where the student's grammar, spelling and critical thinking will be evaluated.

Resources and Materials:**Textbook:**

Griffiths, Wessler, Carroll and Doebley. Introduction to Genetic Analysis, 10th edition. Freeman. ISBN: 1-4292-7212-0

Attendance Policy:

Attendance is required for all scheduled lectures as well as the laboratory sections. *Prompt arrival to class is expected.* As per ALC policy, any student with an absentee rate $\geq 20\%$, *regardless of whether the absences are excused or unexcused*, will fail the course. It is the *student's responsibility* to make every attempt to contact the instructor in advance to notify her of officially excused absences (e.g., professional school interviews, participation in college sanctioned events, etc.) in order to make alternative arrangements to complete any work that would be due during the excused absence. It is the *student's responsibility* to contact the instructor as soon as possible following any unforeseeable emergency (e.g., illness, accident, family emergency, etc.) in order to be given any extensions on deadlines for completion of any missed assignments. It is the *student's responsibility* to clear any absences with the Office of the Academic Dean. It is the *student's responsibility* to complete any and all assignments and to turn them in to be graded in a timely manner.

Make-up and late policies:

Tests can be made up if the student notifies the instructor in advance and a make up date arranged prior to the date of the test. It is important to return tests as quickly as possible, and so delays due to make up will be reduced as much as possible.

You cannot miss your presentations. We will negotiate presentation times well in advance, and subsequent conflicts must be resolved prior to the presentation date in any event.

Policy on Plagiarism:

The ALC faculty has officially adopted the following policy on plagiarism:

“Plagiarism is the act of using another’s idea or expression in your writing without acknowledging the source...In short, to plagiarize is to give the impression that you have written or thought something that you have in fact borrowed from someone else” (21)

“Plagiarism often carries severe penalties, ranging from failure in a course to expulsion from the school.”

“The most blatant form of plagiarism is to repeat as your own someone else’s sentences, more or less verbatim...” (22)

“Other forms of plagiarism include repeating someone’s particularly apt phrase without appropriate acknowledgement, paraphrasing another person’s argument as your own, and presenting another’s line of thinking as though it were your own...”(23)

Source: Gibaldi, Joseph. *MLA Handbook for Writers of Research Papers*. 3rd ed. New York: Modern Language Association of America, 1988.

Evaluation:

Midterm exams:

There will be 4 midterm exams during the semester. 40% of your grade will be attributed to midterm exams. Each exam is thus worth 10% of your final grade.

Individual presentations:

Students will individually make presentations during the last week of classes. The individual student presentation will be worth 5% of your total grade.

Laboratory:

Labs will focus on genetic analysis. We will look at several types of genetic analysis throughout the semester. Lab is worth 25% of your final grade.

Final Exam:

Worth 25% of the final grade.

Grading:

Lecture:

Midterm exams (collectively)	40% of total grade
Presentation	10% of total grade

Laboratory:

Weekly Assignments:	15% of total grade
Lab exams	10% of total grade

Final Exam:

Comprehensive (lab and lecture)	25% of total grade
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The following scale will be used for assigning grades:

A = 90-100
B = 80-89
C = 70-79
D = 50-69
F = ≤ 49

Lecture Schedule (tentative):

Midterm #1. Chapters 1 – 4.

Midterm #2. Chapters 5- 8.

Midterm #3. Chapters 9 – 12.

Midterm #4. Chapters 12 – 18.

Laboratory Schedule (tentative):

Lab 1 Fruit Fly set up. HHMI video.

Lab 2. Harvest of Fear Video

Lab 3. Probability and Statistics. Hypothesis testing.

Lab 4. Plant DNA extraction. First generation of fruit flies.

Lab 5. GMO PCR.

Lab 6. Analysis of Plant GMO PCR data. Lab test #1

Lab 7. Population Genetics.

Lab 8. PV92 DNA extraction and PCR. Second Generation of Fruit Flies.

Lab 9. DNA Forensics.

Lab 10. Quantitative Genetics.

Lab 11. Final Generation of Fruit Flies. Lab Test #2