

Genetics
Dr. Deus
Period 5
Room 202

Course Description

Genetics is a one-semester science elective that provides a deeper exploration of genetics than can be covered in a broader biology course. The course consists of four units, which correspond roughly to a chronological history of discovery in genetics. Transmission Genetics covers the rules of inheritance; Molecular Genetics covers a mechanistic view of inheritance at the cellular and molecular level; Genetic Technology covers current applications of genetics for improving human life; and the fourth unit covers genetically heritable diseases. Students are provided with hands-on opportunities to explore recent advances in biotechnology, and are given a safe environment in which to discuss bioethical issues that will likely impact the society of the future.

Book: Ricki Lewis, *Human Genetics: Concepts and Applications*, 6th Edition.

Syllabus (subject to change)

Week	Unit	Chapter	Subjects
1	Transmission Genetics	1	Overview of Genetics
2	“	4	Mendelian Inheritance
3	“	5	Extensions, Exceptions to Mendel
4	-	-	Test: Transmission Genetics
5	Molecular Genetics	9	DNA Structure & Replication
6	“	10,11	From DNA to Protein, Expression
7	“	12,13	Mutations, Chromosomes
8	-	-	Test: Molecular Genetics
9	Genetic Technology	9	PCR & Forensics
10	“	10	Genetically Modified Organisms
11	“	22,2	Sequencing, Genomics, Stem Cells
12	-	-	Presentation: Technology
13	Genetic Disease	3,6,8,12,13,17	Genetic Disorders
14	“	20	Gene Therapy & Genetic Counseling
15	“	18	Genetics of Cancer
16	-	-	Paper Due: Genetic Disease

Grading

Two in-class unit tests are administered during the first half of the semester. Each test is worth **20%** of the final grade.

An in-class presentation is to be given by students on the “biotech” method of their choice. Detailed requirements for this presentation will be distributed halfway through the semester. The presentation is worth **20%** of the final grade.

A paper on a genetic disease of the student’s choice is to be submitted at the end of the semester, and is worth **20%** of the final grade. Detailed requirements for this paper will be distributed well in advance of the due date.

Homework assignments (typically questions from the reading), laboratory write-ups, and quizzes are worth **15%** of the final grade. Homework assignment sheets are distributed weekly, and typically describe assignments that are due by the end of the week. **Be aware that some assignments require careful planning, discipline, and foresight on the student’s behalf.** A separate handout describes the expectations and format for lab write-ups.

In-class quizzes do occur throughout the semester. Unless otherwise stated by the teacher, quizzes are open note, allowing students to use any notes that they have taken on the reading, class discussions, or laboratory assignments.

A class participation grade is given, which reflects the student's willingness to ask and answer questions, as well as citizenship and appropriate conduct during laboratory and regular classroom days. This is worth **5%** of the final grade.

Each student and his/her parent or guardian is to sign this course description sheet, acknowledging having read it. The return of this signed sheet counts as part of a homework assignment.

This course syllabus may be viewed on the RCS website throughout the school year.

Student name (print)

Student signature

Parent/Guardian signature