



Radnor High School
Course Syllabus
376 Human Genetics



I. Course Description

Genetics

.5 credits

Length: One semester

Format: Meets daily

Prerequisite: Open to all juniors and seniors

This course is a one-semester non-lab elective for juniors and seniors

II. Materials & Equipment

The book used is "Human Genetics – Concepts and applications" by Rikki Lewis. Additional book resources include "Genome" and "Beyond Genetics." Articles are used from current periodicals – The Journal of the American Medical Association, The New York Times, Newsweek, Time, Scientific America, The Economist, Discover Magazine, and more.

Multiple movies and documentaries are used when appropriate.

III. Course Goals & Objectives

The course is designed to expand upon the Genetics unit introduced in the Biology courses and to show the importance of Genetics in taking our understanding of humans to a new level. The goal is to make students aware of the complexity involved in designing organisms (more specifically humans) and to demonstrate both the fragility and sturdiness of the materials that make up our genomes.

IV. Course Topics (Summary Outline)

- A. Introduction
 - 1. Overview of Genetics
 - 2. Cells
 - 3. Development
- B. Transmission of Genetics
 - 1. Mendelian Inheritance
 - 2. Extension and Exceptions to Mendel's Laws
 - 3. Matters of Sex
 - 4. Multifactorial Traits
 - 5. The Genetics of Behavior
- C. DNA and Chromosomes
 - 1. DNA Structure and Replication

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2. Gene Action: From DNA to Protein
3. Control of Gene Expression
4. Gene Mutation
5. Chromosomes

D. Population Genetics

1. When Allele Frequencies Stay Constant
2. Changing Allele Frequencies
3. Human Origin and Evolution

E. Genetic Technology (if time allows)

1. Gene Therapy and Genetic Counselling
2. Reproductive Technologies
3. The Age of Genomics

F. Immunity and Cancer (if time allows)

1. Genetics of Immunity
2. The Genetics of Cancer

Assignments and Grading

Tests: 100 points

Homeworks: 10 points each

Each quarter: 40%

Final Exam: 20%

