

Department: Science

Course Title: Honors Genetics

Course #: 551

DESCRIPTION OF COURSE:

Students will learn about DNA regulation, genetic screening, the Human Genome Project, mutations at the gene and chromosome levels, probability, Mendelian genetics, patterns of inheritance and pedigrees.

Students will understand real-life genetic applications such as genetic engineering, gene therapy, and DNA fingerprinting. Working individually or in small groups, students will analyze and interpret data, as well as scientific literature concerning research in genetic technology. Students will demonstrate their achievement through tests, laboratory investigations, case studies, scientific articles, projects, and cooperative learning activities.

REQUIRED TOPICS OF STUDY	SUGGESTED INSTRUCTIONAL TIME	STANDARDS/ ASSESSMENT ANCHORS
<i>Cell Division and Chromosomes</i>	<i>1 week</i>	<i>3.3.12.C.1</i>
<i>Probability</i>	<i>1 week</i>	<i>3.1.10.B.3</i>
<i>Mendelian Genetics</i>	<i>3 weeks</i>	<i>3.3.10.6</i>
<i>Pedigrees</i>	<i>1 week</i>	<i>3.3.12.C.6</i>
<i>Modification of Mendelian Ratios</i>	<i>1 week</i>	<i>3.3.10.6</i>
<i>Gene Mutation</i>	<i>2 weeks</i>	<i>3.3.12.C.1;4</i>
<i>Cytogenetics</i>	<i>1 week</i>	<i>3.3.12.C.1;4</i>
<i>DNA and DNA Replication</i>	<i>2 weeks</i>	<i>3.1.12.E.1</i>
<i>HGP, DNA Sequencing and Fingerprinting</i>	<i>2 weeks</i>	<i>3.3.12.B.4; 3.6.12.A.2</i>
<i>Protein Synthesis</i>	<i>1 week</i>	<i>3.3.10.C.7</i>
<i>Biotechnology</i>	<i>1 week</i>	<i>3.3.12.C.3</i>

INSTRUCTIONAL RESOURCES:

- *Textbook: Human Genetics, 5th Ed. By Ricki Lewis*
- *Teacher-generated labs, activities and worksheets*
- *Laboratory supplies*
- *Magazines and Newspapers*
- *Internet, CD-ROMs, videos, educational television*
- *Textbook Website*