

**MRS. SITTON
GENETICS
2009-10 COURSE SYLLABUS**

Course Description: Genetics is designed to present students with the biological rationale for making sound environmental and ethical decisions in their daily lives. Emphasis will be placed on communication between cells, molecular basis of development, genetic diseases and genetic advancements in society. We will be covering a broad range of ideas from Mendelian Inheritance, DNA & Chromosomes, Population Genetics, Immunity and Cancer, Genetic Technology, and Forensics Science.

Instructional Philosophy: Students will be given challenging, real world assignments and projects to research and analyze to gain an understanding of the biological and environmental processes critical to making wise decisions in an ever-changing society of science and technology. Classroom activities will include reading, research, projects, and problem solving. Students will often work in groups, but will be expected to complete individual assignments in relation to the group work. Students will be expected to present many of their projects to the class. Class participation / presentation is a must.

Major Course Goals: The student will demonstrate an understanding of the following concepts:

1. The student will develop abilities in science by demonstrating higher order thinking and processing skills as it relates to genetic content.
2. The student will describe the structure and function of prokaryotic and eukaryotic cells.
3. The student will compare and contrast mitotic and meiotic cell division.
4. The student will demonstrate an understanding of Gregor Mendel's discoveries of inheritance.
5. The student will describe the structure and replication process of DNA.
6. The student will evaluate and predict outcomes from forensic evidence and case studies
7. The student will complete all concepts developed by the literacy and numeracy committees for the present year.

Major Course Objectives/Benchmarks by Quarter: Mastery of the course objectives is required with a minimum 70%.

First Quarter

1. Overview of Genetics and Development of Cells.
2. Mendelian Inheritance and Multifactorial Traits

Second Quarter

1. DNA & Chromosomes
2. Population Genetics
3. Immunity and Cancer

Third Quarter

1. Genetic Technology
2. Forensic Techniques

Fourth Quarter

1. Forensic Evaluations and Case Studies

Required/Recommended Reading:

1. Students will be required to read their textbook.
2. Students will be required to read their laboratory assignments and be prepared before class.
3. Students will be required to have appropriate reading material to read during all SSR times.
4. Students will read articles from scientific journals, case studies and magazines during the school year.
5. Students will participate in the literacy program by reading 300 pages of science related material.

Major course projects and Instructional Activities: Students will participate in, but are not limited to the following projects and activities:

Project #1: Reading Assignments

Students will be given various articles based on current technological advances in science to read and evaluate. Each review should include the title and publication date, a summary and personal opinion of the article(s).

Project #2: Stem Cell Research

In today's society there are numerous controversial issues being brought about by technology and science. Many of these issues have / will be put to a vote by the people. Therefore, students need to be educated as to the basis for these controversies in order to make sound decisions in the future. Students will approach the task reflecting on what they have learned through their research. Each student will design a visual aid about stem cell research to inform the public about the pro's and con's of their use.

Project #3: Karyotyping and Pedigrees

All organisms possess a certain number of chromosomes, which exist in pairs. Each student will be given a sample chromosome chart from which to construct a karyotype. A complete analysis of the karyotype will be written up along with a diagnosis for a hereditary disorder / disease. Acting as a genetic counselor, the student will write a letter informing each patient of the potential risks involved in passing on their genes to future offspring. Students will construct pedigrees based on family histories of inherited traits and using the knowledge they've gained, will determine if the traits are dominant, recessive or sex-linked.

Project #4: Disease Case Study

Each student will choose a genetic disease to research and study. A research paper of 3-4 pages will describe the symptoms, etiology, diagnosis (including the chromosome affected), prognosis, and treatment of the disease. Students must do a visual aid that will be used in an oral presentation to inform the class about the disease.

Project #5: Forensics

Students will be presented with various scenarios in which they will perform forensic tests. Each lab will consist of the student performing certain test, answering questions, and a lab write up (letters to companies, data tables & graphs, etc). In conclusion of the unit, there will be a crime scene where each student will use their experiences from previous labs to investigate and analyze the evidence in order to correctly solve the crime. Fingerprints must be lifted and identified, handwriting, ink and paper samples identified; blood samples typed; height established from footprints; and the crime scene correctly established by each student.

Course Assessment Plan: Students will be assessed in the following manner:

1. All students will be required to keep a portfolio of their work in a 1 inch 3-ringed binder to be assessed at the end of each quarter.
2. There will be a test and/or project at the completion of each unit of study. Test will consist of open ended constructive response questions, performance events, and objective questions.
3. Students will be required to complete homework as part of their grade.
4. A comprehensive quarter final will be given at the end of each quarter.
5. An End of Course Exam will be given at the end of the 4th quarter that will cumulative.
6. 80% all Classroom Work / Projects / Unit Tests
20% all Final Exams / End of Course Exam

Classroom Expectations:

1. Be on time and in your seat when the bell rings.
2. Be prepared at the beginning of class. Have your textbook, loose-leaf notebook paper, binder, homework, and a pen or pencil. On SSR days, you must have your reading material.
3. Be respectful of all people and property in the room.
4. Read and follow all directions, as given , the first time.
5. No gum, food, or drink in the room at any time.
6. No grooming (fixing hair, make-up, etc.)
7. Keep your feet on the floor and not on the chairs.
8. Keep book bags out of the aisles and purses/hip bags on the floor during class.
9. The teacher, NOT THE BELL, dismisses the class.

All discipline problems will be handled as described in the student handbook. Be sure you know the consequences for your actions in this classroom.

Supplies and Materials Needed: Students should have the following materials for class:

1. Loose-leaf notebook paper
2. 1 inch, 3-ringed binder
3. Pen or pencil (NO RED PENS!!!)
4. Post-it notes
5. Scientific calculator

Homework Policy and Grading Scale: Please refer to the Student Handbook for the Homework Policy. The grading scale is as follows:

A	100-95	C	76-73
A-.....	94-90	C-.....	72-70
B+.....	89-87	D+.....	69-67
B	86-83	D	66-63
B-.....	82-80	D-.....	62-60
C+.....	79-77	F.....	59-0

Absences: The student is responsible for missed assignments in accordance with the CHS Student Handbook. An assignment notebook and homework crate will be used for assignments given each day. You can always check new.schoolnotes.com for assignments. When you return from an absence:

1. Check the assignment notebook for any assignments given the day you were absent. Worksheets are placed in a folder that corresponds with the day they were given out (M-F). Check the homework crate for any worksheets given on that day. NOTE: There maybe more than one worksheet in a folder. Assignments are kept in the folders for one week, then placed in a folder marked Assignments at the back of the crate until the end of the quarter.
2. Labs missed during an excused absence may be made up during PASS days within a reasonable time frame of that absence. If a lab cannot be set up, an alternative assignment will be given.

Extra Help: If you need any extra assistance I will be available before and after school.

Time and Place to be Reached by Parent: If you need to contact me for any reason please feel free to call me before school, after school, or during my plan period 2nd hour (8:39-9:29 a.m.) the phone number at the high school is 431-2616 ext 4150. I can also be reached by email at gsitton@centralr3.org. Homework assignments can be found online at new.schoolnotes.com