



Advanced Biology: Genetics

Course Description:

Advanced Biology: Genetics is a one semester, rigorous second year, college-level honors biology course with a significant emphasis on current developments and applications in the field of genetics from a human perspective. This course will advance the understanding of the field of genetics as introduced and covered in Biology: The Living Earth.

Course Topics

The course focuses on current developments and applications in the field of genetics from a human perspective. Topics include: Molecular and Cellular Biology, DNA, gene function, genetic engineering, evolution, inheritance patterns, chromosomes, chromosomal behavior and abnormalities, genetic disorders, microbial genetics, biotechnology, the genetics of cancer, and developmental biology. Associated lab work includes short and long-term experiments and problems that are designed to reinforce the concepts learned in class. Lab activities may include: Mendelian inheritance experiments and problems, DNA analysis, PCR, pedigree analysis, karyotyping, blood work, fingerprinting, human trait studies, statistical analysis, electrophoresis, DNA fingerprinting, recombinant DNA, microarray, along with various case studies.

Course Expectations

Students will begin to read primary scientific literature, compose annotated bibliographies, and communicate their findings in the form of scientific papers or presentations. Due to the rigor and pace of this course, there is an additional required time commitment. Students will be expected to perform labs / activities and adhere to all proper safety protocols. Student will have approximately 60 minutes of homework after each class meeting.

Prerequisites:

Biology: The Living Earth, Integrated Math 2, Chemistry: In the Earth System

Textbooks / Provided Materials

Human Genetics, Ricki Lewis, McGraw Hill, 11th Edition 2015

Microsoft Office 365 Suite / OneNote for notes and work completion

Required Materials

Scientific Calculator (TI-30XIIIs equivalent or better)

Suggested Materials

Apple or PC tablet with pen feature, or a pen/pad USB plug-in. These devices will increase the student's productivity for organization and work completion.

High Bluff Academy is accredited by the Western Association of Schools and Colleges (WASC). The above course is approved by the University of California system (A-G) and the National Collegiate Athletic Association (NCAA).