

SC2140/ Biology 1 Syllabus

Course Title----- Biology 1
 Course Number----- SC2140
 Grades:----- 10-10
 High School Credit Value:----- 0.5
 Prerequisites:----- Physical Science 1-2 or the equivalent of
 one year of 9th grade science.

Course Length:----- Regular courses: 17 weeks
 CR: 9-17 weeks.

Course Time:----- Regular courses: 17 week schedule: 75 - 90
 minutes per school day (6-7.5 hours per
 week)
 Credit Retrieval: 75 - 90 minutes per
 school day (6-7.5 hours per week) until
 course completion.

{ Course Description }

Biology 1 is the first semester of a full year science course offering a broad introduction to the scientific method, basic chemistry, cells, cellular processes and genetics. A semester final and will be required. This course helps meet the state minimum requirements of 2.0 science credits in addition to it meeting a lab requirement. Please check with your district for more specific requirements.

Course Materials:

Refer to the course Materials list located in the Course Description and Materials web page in this Orientation folder.

Technical requirements include the ability to download and use freeware such as Adobe Acrobat and Flash. PowerPoint presentation software is also recommended.

State Alignments

Washington State Standards guided the design of the course. Learning expectations are found within the course itself.

This course is designed to correspond to the FWSD Power Standards

<p>PS1 Feedback is a process in which the output of a system provides information used to regulate the operation of the system. Positive feedback increases the disturbance to a system. Negative feedback reduces the disturbance to a system.</p>	<p>Unit 3</p>
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<p>PS2 Scientific progress requires the use of various methods appropriate for answering different kinds of research questions, a thoughtful plan for gathering data needed to answer the question, and care in collecting, analyzing, and displaying the data.</p>	Unit 1
<p>PS3 Conclusions must be logical, based on evidence, and consistent with prior established knowledge.</p>	Unit 1
<p>PS4 Public communication among scientists is an essential aspect of research. Scientists evaluate the validity of one another's investigations, check the reliability of results, and explain inconsistencies in findings.</p>	Unit 1
<p>PS5 It is important for all citizens to apply science and technology to critical issues that influence society.</p>	Semester 1
<p>PS6 Carbon-containing compounds are the building blocks of life. Photosynthesis is the process that plant cells use to combine the energy of sunlight with molecules of carbon dioxide and water to produce energy-rich compounds that contain carbon (food) and release oxygen.</p>	Unit 2, Unit 4
<p>PS7 The cell is surrounded by a membrane that separates the internal of the cell from the outside world and determines which substances may enter and which may leave the cell.</p>	Unit 3
<p>PS8 The genetic information responsible for inherited characteristics is encoded in the DNA molecules in chromosomes. DNA is composed of four subunits (ATCG). The sequence of subunits in a gene specifies the amino acids needed to make a protein. Proteins express inherited traits and carry out most cell function.</p>	Unit 4
<p>PS9 All of the functions of the cell are based on chemical reactions. Food molecules are broken down to provide the energy and the chemical constitutes needed to synthesize other molecules. Breakdown and synthesis are made possible by proteins called enzymes. Some of these enzymes enable the cell to store energy in special chemicals, such as ATP, that are needed to drive the many other chemical reactions in a cell.</p>	Unit 4
<p>PS10 Genes are carried on chromosomes. Animal cells contain two copies of each chromosome with genetic information that regulate body structure and functions. Most cells divide by a process called mitosis, in which the genetic information is copied so that each new cell contains exact copies of the original chromosomes.</p>	Unit 4
<p>PS 11 Egg and sperm cells are formed by a process called meiosis in which each resulting cell contains only one representative chromosome from each pair found in the original cell. Recombination of genetic information during meiosis</p>	Unit 3

scrambles the genetic information, allowing for new genetic combinations and characteristics in the offspring. Fertilization restores the original number of chromosome pairs and reshuffles the genetic information, allowing for variation among offspring.	
PS12 Matter cycles and energy flows through living and nonliving components in ecosystems. The transfer of matter and energy is important for maintaining the health and sustainability of an ecosystem.	Semester 2
PS13 Population growth is limited by the availability of matter and energy found in resources, the size of the environment, and the presence of competing and/or predatory organisms.	Semester 2
PS14 Biological evolution is due to: (1) genetic variability of offspring due to mutations and genetic recombination, (2) the potential for a species to increase its numbers, (3) a finite supply of resources, and (4) natural selection by the environment for those offspring better able to survive and produce offspring.	Unit 5
PS15 Random changes in the genetic makeup of cells and organisms (mutations) can cause changes in their physical characteristics or behaviors. If the genetic mutations occur in eggs or sperm cells, the changes will be inherited by offspring. While many of these changes will be harmful, a small minority may allow the offspring to better survive and reproduce.	Semester 2

Course Outline

Unit 1: The Nature of Science and Biology

- Section 1 - Biology: The Study of Life
- Section 2 - Chemistry of Life

Unit 2: Photosynthesis and Cellular Respiration

- Section 1 - Energy
- Section 2 - Photosynthesis: Food Production
- Section 3 - Cellular Respiration

Unit 3: Cell Structure

- Section 1 - Cell Structure
- Section 2 - Cell Membrane: Structure and Function

- Section 3 - Chromosomes and Cell Reproduction
- Section 4 - Meiosis and Sexual Reproduction

Unit 4: Genetics

- Section 1 - Mendel and Heredity
- Section 2 - The Chromosome Theory Of Inheritance
- Section 3 - Human Genetic Traits
- Section 4 - How Proteins Are Made
- Section 5 - Protein Synthesis: From Gene to Protein
- Section 6 - Biotechnology and the Genetics Revolution

Unit 5: Evolution

- Section 1 - Evolution: Descent With Modification
- Section 2 - Evolution and Genetics

Semester Final Exam**Course Work**

Students are expected to put in 6-8 hours per week to complete their lessons. Teacher may return assignments and ask student to make modifications if it does not meet minimum standards. A semester final is required.

Assignments are submitted online, with rare exception. Students may contact their teacher through email, by phone, in live chat session, or during live online study sessions. Weekly academic contact is strongly recommended for students to be successful in this class.

Units and lessons should *always be done in the order presented on the student individualized schedule*. **Unit tests can only be taken once.** Students should study all unit instruction and lessons prior to taking tests to prepare themselves.

Grading

Lesson assignments will be graded using the following criteria:

- Proper spelling and grammar should be used at all times.
- Lab write-ups should follow standard format provided in the course.
- All lesson answers should be paraphrased from the information in the sources. Copying and pasting from sources will not be tolerated. Students must write answers in their own words.

Projects will be graded using the following criteria:

- All prescribed formats will be followed.
- Bibliographic citation of all web resources must accompany the project, including the URL, name of the web site, and author or editor if available.
- Copying or plagiarism will not be tolerated. Plagiarism may result in no credit given for the lesson or project.

Revision Policy:

- Students may be either given a score for submitted work or work may be returned for revision.
- Students have one opportunity to revise and return work for credit.
- Revised work should be returned to the teacher in a timely manner.
- Revised work will still be worth up to full credit.
- Work submitted in bulk either during the semester or especially at the end of the semester will not be available for revision and will be scored as submitted.
- Unit tests and the semester final may only be taken once.

Occupational Credit:

This course may qualify for *occupational credit. Please consult your school counselor for further clarification.

*Please note that FLA901 (Sign Language) does not qualify for occupational credit.

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