Course Introduction:

SC 202 Biology is designed to be closely correlated to the knowledge, the skills and the abilities students need to master in order to be prepared for success in an introductory college level biology course or in an AP Biology class. This class should be treated as an extension of the fundamental core ideas of life science and science practices experienced in SC 101. The course will be divided into five unit topics which when put together, interlink foundational knowledge, understanding and key principles to form core ideas about the study of biology required for a student to be deemed college ready. The five units include topics related to: The cell, its’ structure, function and processes; Flow of energy within ecosystems; Inheritance and variation of traits; Evolution, natural selection, common ancestry, artificial selection and finally the relationships between systems within ecosystems. The course is also intended to immerse the learner to the ongoing expansion of the breath of the biological science discipline through exposure to some of the current areas of research, ethical debates and hot topics associated with the different life science fields.

All performance expectations and core topics students’ encounter in SC 201 are adapted from the Next Generation Science Standards (NGSS) and the College Board’s science standards for college success\(^1\) with an emphasis on eight essential science and engineering practices outlined by the NGSS\(^2\). All assessments within SC201 are designed to measure student aptitude of these standards and practices. Each Unit’s essential knowledge is aimed to outline the key understandings a student must have in order to effectively reach performance expectations. Essential knowledge also provides an indicator of the required level of language and comprehension for readiness in college level Biology. The essential knowledge is also adapted from the NGSS and College Board’s science standards for college success\(^1\).

Throughout the course students must:

- Apply care to laboratory equipment and demonstrate appropriate safety procedures when selecting, operating, and storing equipment correctly, in accordance with SUIS US High School science department laboratory safety manual.
- Read and abide by all laboratory rules contained in the SUIS US high school science department laboratory safety manual.
- Incorporate eight essential scientific practices into their day to day learning, assignments and assessments for this course.
- Use Scientific Practice 1 (SP1) – Use representations and models to represent scientific phenomena or solve problems.
- Use SP2 – Use mathematics and calculations appropriately.
- Use SP3 – Engage in scientific questioning to guide inquiry based investigations
- Use SP4 – Plan and implement data collection strategies in relation to specific scientific questions.
- Use SP5 – Analyze and interpret evidence gathered from an investigation.
- Use SP6 – Justify and explain interpretations made by engaging in debate and argumentation.
- Use SP7 – Be able to identify and construct explanations of data collected and identify errors made & possible improvements to investigations.
- Use SP8 – Use information to connect and relate knowledge gained across the many scientific domains and also include practical uses of all sciences.

\(^1\) http://www.nextgenscience.org/next-generation-science-standards
Instructional Resources

2. mrdoylesuis.weebly.com – used for posting assignments, PowerPoint and additional reading documents related to the course content.
3. Quizlet.com/doylesuis – used for ESL support of key terms and vocabulary related to course content.
4. Dropitto.me/doylesuis - used for receiving and storing softcopies of student’s major summative assignments.
5. New scientist Journal – used to supplement learning and relate course content to ongoing current scientific issues and studies.

Course Overview

**Unit 1 - Come together - Structure & function of Organisms**

Duration of study: 9 weeks.

<table>
<thead>
<tr>
<th>Unit Disciplinary Core Ideas</th>
<th>Topics of study.</th>
<th>Suggested Major Summative assessment activities.</th>
</tr>
</thead>
</table>
| 1.1 Cell Structure & function| - Building blocks of life: Monomers & polymers  
- Single celled organisms (unicellular).  
- Multicellular organisms  
- Cell organelles and their function  
- Human body tissue and organs. (Circulatory, excretory, reproductive, immune systems etc).  
- Plant cells and tissues. (Transport in plants, reproduction in plants).  
- Cell membranes  
- Cellular transport (passive & active transport).  
- Homeostasis | Investigating the effect of pH on the rate of enzyme activity – formal laboratory report.  
Investigating the effect of temperature on the rate of enzyme activity – formal laboratory report.  
Investigating the effect of heat denaturing on enzyme activity – formal laboratory report.  
Preparing Animal & Plant cells and using a light microscope to compare the structure of each.  
Group presentation – study of cell function: comparison of animal cells & analogous plant cell.  
Investigating the substances that pass through a selectively permeable membrane.  
Investigate the factors which affect permeability of a membrane.  
Investigating Osmosis using vegetable samples – formal laboratory report. |

| DCI 1.2 Cell Growth & repair | - Cellular growth  
- Mitosis & Meiosis  
- Cell cycle regulation  
- Cancer | Modeling Mitosis – create an educational video/applet resource.  
Research paper – the Biology of cancer.  
Biology Timeline – From zygote to High school. Story of cell development and their roles in creating complex organisms |

| DCI 1.3 Cell differentiation | - Human development before birth  
- Birth, Growth and aging  
- Stem cells  
- Modern Stem cell research | Research project and debate – The Ethics of stem cell research.  
Unit quizzes & exams. |

Unit Essential Knowledge:

- The cell is the functional unit of all organisms. All essential life functions (e.g. energy transfer, exchange of gas, disposal of wastes, reproduction, and growth) take place within a cell or within a system of cells.
- In multicellular organisms systems of specialized cells (tissues & organs) that are connected and that cooperate with each other to perform essential functions of life.
- Different multicellular organisms use different systems of specialized cells to carry out the same basic life functions.
The human body is made up of cells that are organized into tissues and organs. These tissues and organs make up complex systems that have specialized functions (e.g. circulatory, endocrine, etc) that support essential life functions of the organism.

The cell membrane forms the boundary that controls what enters the cell and what leaves the cell.

The essential functions of a cell involve chemical reactions that take place between many different types of molecules (e.g. water carbohydrates, lipids, nucleic acids and proteins) and that are facilitated by enzymes. Water plays an important role both in reactions and as a major environmental component for all cells).

Due to differences in concentration of molecules, molecules move in and out of a cell and among cells through specialized mechanisms called passive transport and active transport. The concentration of molecules and energy are factors in type and direction of transport.

Feedback mechanisms maintain a living system’s internal conditions within certain limits and mediate behaviors allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.

Cells typically undergo a continuous cycle of cell growth and division. Although most cells share the same cell cycle phases, the length of each cell cycle phase, and therefore frequency of cell division, varies among different cell types.

In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow.

Normal progression through the cell cycle and readiness to initiate reproduction are constantly evaluated at check points throughout the cell cycle, abnormal or damaged cells are targeted for repair or for intentional destruction (apoptosis).

Cancer occurs when there are malfunctions in the checkpoint feedback system resulting in defective cells to continue cycling and the number of abnormal cells to proliferate.

During the successive division of an embryo’s cells activation or inactivation of different genes in these cells causes the cells to develop in different ways.

An organism begins as a single fertilized egg that divides successively to produce many cells. Each parent cell passes identical genetic material (two variants of each chromosome pair) to both daughter cells.

During the successive division of an embryo’s cells, activation or inactivation of different genes in these cells causes the cells to develop in different ways.

Stem cells are undifferentiated cells which divide through mitosis and of which at least one of the daughter cells remains undifferentiated. At specific times, some daughter cells will differentiate to become a specific type of cell with a specialized function, while others continue as non specialized cells.

There are stem cells at all stages of development (e.g. in embryos as well as in adults.) Adult stem cells continue to divide, generating both a differentiated daughter cell of a specific tissue type and an undifferentiated daughter cell.

Unit 2 – Here comes the sun – Flow of Matter & Energy in Ecosystems

Duration of study: 9 weeks.

<table>
<thead>
<tr>
<th>Unit Disciplinary Core Ideas</th>
<th>Suggested Major Summative assessment activities.</th>
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<tbody>
<tr>
<td>DCI 2.1 Utilization of Energy</td>
<td>Investigate the absorption spectra of photosynthetic pigments.</td>
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<tr>
<td>- Photosynthesis</td>
<td>Investigate the influence of changing light intensity and/or carbon dioxide levels on the rate of photosynthesis – formal lab report.</td>
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<tr>
<td>- Cellular Respiration</td>
<td>Investigate the influence of different wavelengths of light on the rate of photosynthesis – formal lab report.</td>
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<td></td>
<td>Design an investigation to prove that carbon dioxide is released during cellular respiration.</td>
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<td></td>
<td>Investigate some of the factors that affect the rate of cellular respiration – formal lab report.</td>
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<tr>
<td></td>
<td>Prepare and show the production of alcohol by yeast.</td>
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<tr>
<td></td>
<td>Investigate the variables that affect the process of fermentation.</td>
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</table>
**DCI 2.2 Matter Cycling**
- Cycles in the biosphere (water, carbon, oxygen, phosphorus, nitrogen).

Demonstrating cycles – poster project.
Investigate the amount of nitrate found in various water sources.
Investigate the affect of plant growth and development in the absence of nitrogen – formal lab report.

**DCI 2.3 Transfer of Energy**
- Models of energy flow (food webs, food chains, pyramids of biomass).

Constructing a food web using computer aided software.
Investigating the effect of changing environmental conditions on the flow of matter and energy in an ecosystem.
Case study research project (natural disasters & agricultural factors) – classroom debate.

**DCI 2.4 Bioaccumulation & Ecosystems**
- Toxicology
- Bioaccumulation Factor (BAF)

Developing a model of bioaccumulation and biomagnifications of toxins in a food web.
Case study – DDT in food webs – writing an environmental report.

**Essential Knowledge:**

- All the molecules that make up food in an ecosystem once existed as other molecules in the physical (abiotic) environment and were transformed and incorporated into the biological (biotic) components of the ecosystem primarily by producers via photosynthesis.
- Photosynthetic organisms take in essential molecules from their environment (e.g. soil or water).
- During photosynthesis, carbon dioxide and water from the physical (abiotic) environment change (react) chemically to produce sugar molecules in plants and other photosynthetic organisms. The sugar molecules are used immediately by the organisms as an energy resource for life processes, are incorporated into body structures or are stored for later use.
- The sugar molecules formed during photosynthesis contain carbon, hydrogen and oxygen. Their hydrocarbon backbone are used to make amino acids and other carbon based molecules that can be assembled into larger molecules such as proteins or DNA.
- Matter is transferred from organisms to the physical (abiotic) environment when molecules from food react with oxygen to produce carbon dioxide and water in a process called cellular respiration. Cellular respiration
- Photosynthetic organisms (producers) at the lowest trophic level transform energy from the sun to chemical energy. At the next trophic level, the chemical energy in producers is transferred to organisms that each the producers (consumers). Other organisms called decomposers consume the remains of both producers and consumers as food. Decomposers transfer any remaining chemical energy to molecules that can no longer be used as food.
- Because an organism’s entire body is not used as food at the next trophic level, and because much of the chemical energy is lost to the environment as thermal energy, only a fraction of the energy at a given trophic level is used for growth, reproduction and other body functions at the next trophic level.
- The transfer of chemical energy within living systems involves chemical reactions among ATP, ADP and an inorganic phosphate. The conversion of ATP to ADP and an inorganic phosphate drives other essential reactions in living systems.
- During cellular respiration, molecules from food – mainly sugars and fats – are converted in the presence of oxygen into carbon dioxide and water, and the chemical energy of that reaction is used to combine ADP and an inorganic phosphate to make ATP.
- Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment.
- During fermentation, molecules from food are partially broken down in cells in the absence of oxygen into smaller molecules (but not completely into CO₂ & H₂O). Compared to reactions in cellular respiration these reactions result in less ADP being combined with an inorganic phosphate make ATP – therefore less energy is made available during fermentation than during cellular respiration.
- Although matter is transformed in reactions such as respiration & fermentation as the atoms of molecules are rearranged; the matter is neither created nor destroyed.
- Agricultural run-off releases nitrogen and phosphorus to aquatic systems. These important nutrients impact aquatic ecosystems, leading to eutrophication in rivers, estuaries and coastal ocean systems.
Unit 3 – You can’t always get what you want – Inheritance and Variation of Traits

Duration of study: 6 weeks.

<table>
<thead>
<tr>
<th>Unit Disciplinary Core Ideas</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>DCI 3.1 The Model of Inheritance</strong>&lt;br&gt;Topics of study.</td>
<td>Creating a Biography of Mendel and other early geneticists (e.g. Watson &amp; Crick, Franklin).&lt;br&gt;Predicting probability in genetics using punnett squares.&lt;br&gt;Data collecting and analysis activity – Blood types of the student population.&lt;br&gt;Investigate: Can the phenotype of offspring help determine parental genotype?</td>
</tr>
<tr>
<td>- Gregor Mendal &amp; his work&lt;br&gt;- Dominance&lt;br&gt;- Genotype &amp; Phenotype&lt;br&gt;- Monohybrid &amp; Dihybrid crosses&lt;br&gt;- Recombination&lt;br&gt;- Gene Linkage &amp; Polyploidy</td>
<td>Analyzing pedigrees – The royal disease. Tracing back through family trees.&lt;br&gt;Surveying the study body population for genetic traits (e.g. tongue rolling or hitchhiker’s thumb).</td>
</tr>
<tr>
<td><strong>DCI 3.2 Inheritance &amp; variation of traits.</strong>&lt;br&gt;- Pedigrees&lt;br&gt;- Incomplete and co-dominance&lt;br&gt;- Sex linked traits, chromosomes &amp; hereditary</td>
<td>Modeling DNA structure&lt;br&gt;Modeling DNA replication (multimedia project presentation).&lt;br&gt;Comparing Eukaryotic &amp; Prokaryotic DNA replication.&lt;br&gt;Extraction of DNA from plant cells laboratory activity.&lt;br&gt;Research project – Gene patenting&lt;br&gt;Forensics lab – Using DNA to identify human remains.</td>
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<tr>
<td><strong>DCI 3.3 Molecular genetics</strong>&lt;br&gt;- DNA and chromosome structure&lt;br&gt;- Replication of DNA</td>
<td>Modeling mutations &amp; researching and writing an account of selected genetic disorders.&lt;br&gt;Effects of Mutations – Movie analysis “Contagion”.</td>
</tr>
</tbody>
</table>
| **DCI 3.5 Genetic Engineering**<br>- Recombinant DNA technology<br>- Biotechnology<br>- Human Genome project & Gene therapy | Essential Knowledge:

- Gregor Mendel demonstrated that the inheritance of physical traits in pea plants follows simple mathematical laws.
- The behavior of chromosomes during the division process of sexual reproduction (meiosis) established a physical basis for Mendel’s mathematical laws of heredity.
- DNA is the source of genetic information that determines an organism’s traits.
- Prior to reproduction, each individual DNA molecule makes a copy of itself. This process ensures that the genetic information is copied into each new organism.
- In some organisms, all of the DNA molecules come from a single parent (asexual reproduction). These organisms go through a division process (mitosis) that ensures the direct transfer of genetic information (DNA) from one generation to another.
- Sex cells are formed by a process of division (meiosis) in which the number of chromosomes and thus the amount of DNA, per cell, is halved after replication.
- With the exception of sex chromosomes, for each DNA molecule (chromosome) in the body cells of a multicellular organism, there is a similar but not identical, chromosome (homologous pair). Although these pairs of similar chromosomes can carry the same genes, they may have slightly different versions of the genes (alleles). During the formation of sex cells (meiosis), one chromosome from each pair is randomly passed on (independent assortment) to form sex cells, resulting in a multiple of possible genetic combinations.
- Genes are segments of DNA that are in locatable regions on the DNA molecules that specify protein sequence and, in turn, an organism’s traits. (some segments of DNA have no known function).
- The protein information contained in the sequence of nucleotide bases that makes up a strand of DNA is transmitted to a messenger RNA molecule (transcription). The messenger RNA molecule, with the help of other RNA molecules (ribosomal and transfer), then guides the production of a
specific amino acid sequence of a particular protein (translation). These messenger RNA molecules degrade into nucleotide bases, which are then recycled into new RNA.

- Protein molecules are long folder chains of 20 different amino acids. The AA sequence determines the shape and function of the protein molecule that is produced.
- Traits (phenotype) can be structural, physiological or behavioral; they can include readily observable features at the organism level as well as less observable features at the cellular level and molecular levels.
- Sexually reproducing organisms contain two similar, but not identical, versions of the each chromosome (i.e. the chromosomes have some genes [alleles] that are the same on both versions of the chromosome and some that are not). Each trait that results from these different gene combinations depends on the nature and amount of the protein that each gene produces, as well as on the interactions between these proteins.
- DNA is transmitted from one generation to the next during both sexual and asexual reproduction. However, mistakes that involve changes in the sequence of nucleotide bases (mutations) may occur during DNA replication or during the division process. These changes can be transmitted to the offspring, depending on the organism and cell type.
- Mutations may cause no change in an organism’s traits (phenotype) a detrimental change or a beneficial change. (Mutations that alter the sequence of DNA may lead to a change in the protein produced).
- Nor everything that carries genetic information is a cell. A virus, which is not a cell, contains either DNA or RNA as its genetic information. To reproduce, a virus uses its own DNA or RNA but also the cellular machinery of a host cell. Often, the viral genes are incorporated into the host DNA or RNA, disrupting the DNA sequence within the host cell.

Unit 4 - Happy Natural Selection and Evolution

Duration: 6 - 8 weeks.

<table>
<thead>
<tr>
<th>Unit Disciplinary Core Ideas</th>
<th>Suggested Major Summative assessment activities.</th>
</tr>
</thead>
</table>
| DCI 4.1 Evidence of Common Ancestry and Divergence | Investigating spontaneous generation.  
- The origin of life – theories.  
- Fossil evidence & fossil record  
- Comparative anatomy, embryology & biochemistry.  
Correlating rock layers using fossils  
Creating a geological time scale  
Using DNA sequences to create phylogenetic trees. |
| DCI 4.2 Evolution & Adaption | Constructing an argument for evolution based on multiple lines of evidence – essay project.  
- Darwin’s theory of evolution through natural selection.  
- Types of adaptation.  
- Geographical isolation and evolution.  
- Convergent evolution.  
- Human Ancestry  
Modelling natural selection lab (virtual simulation).  
Documentary analysis – “Inside natures Giants” (analyzing the adaptations of mega fauna).  
Research project – creating your own mini-documentary of a biodiversity hotspot. (e.g. Madagascar, Galapagos).  
Mapping Hominoid migration.  
“The Ancestors Tale” – backward journey of our recent ancestors |
| DCI 4.3 Genetic Variations Within Populations | Population dynamics – lab investigation (simulation).  
- Hardy Weinberg Principle  
- Genetic drift & Gene flow  
- Speciation  
Case study of speciation – Great African Lakes & |
| DCI 4.4 Artificial Selection and Breeding | From Wolf to Pet – Evolutionary history of your dog – research project.  
- Agricultural Revolution & Domestication.  
- Modern GM foods.  
Classroom debates: “Artificial selection of racehorses – are they the way nature intended? & “are modern GM foods really any different from how humans have altered wild species for centuries”? |

Essential Knowledge:

- Fossils are preserved remains or traces of organisms that provide evidence of past life. Because of the unique geological conditions that are required for preservation, not all organisms left fossils.
that can be retrieved.

- The fossil record documents the existence, diversity, extinction and change over time of many life forms throughout Earth’s history.
- The existence of different life forms in different time periods led to the idea that newer life forms descended from older ones.
- Organisms resemble their ancestors because their genetic information (DNA) is transferred from ancestor to offspring during reproduction.
- The branching that characterizes the lines of decent can be inferred from the DNA composition of organisms over time.
- Natural selection leads to a diversity of organisms that are anatomically, behaviorally and physiologically well suited to survive and reproduce in a specific environment.
- Over time, the differential survival and reproduction of organisms within a population that have an advantageous heritable trait lead to an increase in the proportion of individuals in future generations that have the trait and a decrease in the proportion of individuals that do not.
- Changes in the abiotic environment, including climatic and geological processes, have contributed to the decline of some species and the expansion of other species.
- When environmental change (naturally occurring or human induced) happens, extinction can occur. Species become extinct because they cannot survive and reproduce in their environments. If members cannot adjust (because change in the environment is too fast or too drastic) they die or become unable to reproduce, thus negating the opportunity for evolution.
- Natural selection can occur only if there is variation in the genetic information between organisms of the same species in a population and variation in the expression of that genetic information as a trait. Genetic variation within a population influences the likelihood that a population will survive and produce offspring.
- The expression of new anatomical, physiological and behavioral traits (phenotype) in organisms within a population can result from recombining existing genes and random sorting during sex cell production and fertilization. Variation within a population of organisms can also result from genetic mutations that create variation in the expression of traits (phenotype) between organisms of the same species.

Unit 5 – With a little help from my friends - Interdependent Relationships in Ecosystems

Duration: 4 weeks.

<table>
<thead>
<tr>
<th>Unit Disciplinary Core Ideas</th>
<th>Suggested Major Summative assessment activities.</th>
</tr>
</thead>
</table>
| **DCI 5.1 Interactions of living and non-living systems**<br>
- Organization levels in an ecosystem.<br>
- Habitats |
| Modeling habitats – pond in a jar. |
| **DCI 5.2 Interactions of living systems**<br>
- Community relationships (competition, predation, symbiosis, commensalism, parasitism).<br>
- Population ecology. |
| Research project – Symbiotic relationships.<br>
Population dynamics data analysis and creating arguments lab activity. |
| **DCI 5.3 Ecosystem Stability**<br>
- Changes in an ecosystem.<br>
- Fieldwork – monitoring biodiversity & modeling ecosystem health. |
| Stability Lab investigation. Investigating what will happen to an ecosystem if there are biotic or abiotic changes (computer simulation).<br>
Field Work trip – BioBlitz & citizen science. |
| **DCI 5.4 Human interactions with Ecosystems**<br>
- Biodiversity & Conservation.<br>
- Impacts of Climate Change. |
| Radio Lab - Galapagos podcast Analysis (Class debates: The need for conservation, How far should Humans go?)<br>
Design a conservation program – awareness campaign. |

Essential Knowledge:

- Organisms have traits that enable them to be more successful in some physical (abiotic) environments than in others. Changes in environmental conditions result in changes to the number
and types of organisms that survive in these environments.

- The variety of physical (abiotic) environments on earth gives rise to diverse environments (e.g., deserts, rain forests, coral reefs, swamps) and allows for the existence of a wide variety of organisms (biodiversity).
- Organisms impact their local environment as they interact with other organisms and with their physical (abiotic) environment.
- The network of organisms, the relationships among these organisms, and the nonliving environment in which these organisms live is called an ecosystem.
- The relationships (e.g., mutualism, commensalism, parasitism, predator-prey, and herbivore-autotroph) within an ecosystem vary. Some organisms depend so much on a particular organism for food and shelter they cannot survive without the organism.
- There are limits to the number and type of organisms and populations an ecosystem can support (carrying capacity), depending in part on how the particular organisms involved interact with each other. These limits are determined by factors such as disease, predation, competition and availability of biological (biotic) resources and physical (abiotic) factors.
- All resources are finite. Therefore, if a resource is used up by one organism, it is unavailable to another organism. Competition for these limited resources may occur among members of the same species, or among members of different species.
- Ecosystems are dynamic in nature; the number and types for species fluctuate over time. Disruptions, deliberate or inadvertent, to the physical (abiotic) or biological (biotic) components of an ecosystem impact the composition of an ecosystem.
- Biodiversity is often used as a measure of the health of an ecosystem.
- The number of organisms in ecosystems fluctuates over time as a result of mechanisms such as migration, birth and death. These fluctuations are essential for ecosystem stability and characterize the dynamic nature of ecosystems.
- Ecosystems can be reasonable stable over hundreds and thousands of years. If a disturbance to the biotic or abiotic components of an ecosystem occurs, the affected ecosystem may return to system similar to the original one, or it may take a new direction and become a very different type of ecosystem.
- Ecosystems are not always stable over short periods of time. Changes in climate, migration by an invading species into an ecosystem, and human activity can impact the stability of an ecosystem.
Class Rules
1. Speak only in English unless otherwise allowed by the teacher.
2. Do not use profanity or other inappropriate, insensitive language.
3. Always come to class prepared and ready to learn, which includes being seated and having all your materials ready by the start of each class.
4. Be attentive and respectful towards each other and the teacher.
5. Electronic devices, including cell phones, laptops, and electronic dictionaries can only be used if explicitly allowed by the teacher.

Required Materials
1. Pen, Pencil
2. One A4 notebook
3. One A4 sized Homework copy
4. One squared paper log book (provided).
5. Homework planner
6. One two-ring or three-ring binder (for Laboratory Portfolio).
7. Flash Drive
8. Metric Ruler
9. School email.

Assessment
- Finals (30%) – End of year exam + Final Project.
- Course work (70%)

Course work consists of 100 points distributed as follows:
- Laboratory investigations (35 pts) - Reports on designated major laboratory investigations where units DCI’s are put into action. Usually typed report documents but also there will be oral reports and presentations.
- Complete neat intact Log Book of lab activities (personal journal) (5%)
- Project work (20 pts) - Large assignments which assess a combination of essential science practice competency, unit essential knowledge and performance expectations. Often practical-based STEM (Science, Technology, Engineering & Mathematics) themed assignments
- Quizzes (20 pts) - Short written assessments which assess the units’ performance expectations through a combination of multiple choice and free response questions
- Short homework (15 pts) - Assignments which assess a students learning of essential knowledge and progress throughout a unit of study. Also making sure the appropriate scientific vernacular is being learned and put into practice.
- Vocabulary assignments on Quizlet & upkeep of Lab rules. (5 pts)

Late Assignments
Late assignments may be submitted at the beginning of the next class period with 15% taken off the total grade. Assignments submitted on the third day after the due date will be accepted for 30% off the total grade. Assignments submitted after the third day will receive a 0 grade.

Absence
If a student is absent from class, he is responsible for making arrangements with the teacher to go over the material and assignments that he missed. He may also find it helpful to acquire notes from his classmates.

Academic Honesty
It is important for students to author their own work, and to refrain from cheating or plagiarism. Plagiarism will not be tolerated. For homework and projects, please do not copy directly from the textbook, news articles, fellow students, or any other source. When sources of information are used, they must be properly cited. If there is evidence of plagiarism, cheating, or other forms of academic dishonesty, the student will receive a zero on regular assignments. If this occurs for major projects or final exams, specific penalty will be determined with the consultation of the High School Principals. All cases of academic dishonesty will be reported to the High School Principals.
Changes to the Syllabus
The Wan Yuan US High School is a new school. As such, there are likely to be changes in the schedule, practices, policies, etc., which might result in small changes in how this class is taught. Please be flexible and work closely with the teacher to make sure that you always understand what is expected of you.