



Course Title: Advanced Biology I/II

Instructor: Ms. Corrao

Instructor Availability: Wednesdays 3:15-4:30

Instructor Contact: acorrao@gomperscharter.org/Room 19

Course Description:

This course is designed to satisfy the requirement of a laboratory science class. It is a high school course and aligns with Next Generation Science Standards. Emphasis is placed on important concepts that applies to all living organisms and systems. Laboratory inquiry, field projects, demonstrations and course is designed to develop a thorough understanding of cellular biology, genetics, ecology, evolution and biodiversity. Students will gain better reasoning power through laboratory and field work experiences. The course begins with the study of living organisms and their interactions with the environment and then proceeds more in depth to life at the cellular level. We will also study methods used for investigation and experimentation.

GPA Grading Guidelines:

Category	Grading Criteria	Percentage
Classwork	<ul style="list-style-type: none">• Labs and mini-labs• Group work• Preludes/Exit tickets• Notebook and binder checks	30%
Demonstrations of Learning	<ul style="list-style-type: none">• Weekly quizzes• Unit tests	35%
Homework/Independent Learning	<ul style="list-style-type: none">• Science Readings• Lab Reports	10%
Quarter Finals	<ul style="list-style-type: none">• Cumulative Exam covering topics from all previous units	25%

* Classwork/Participation and Homework/Independent Learning will be updated weekly.

Course Materials:

- **Notebook:** Students will be provided with a notebook for this class and are expected to maintain detailed notes. Notebooks will be checked and graded at the end of each unit.
- **Binder:** Students should have a binder organized in the GPA format with a section devoted to chemistry. Students are expected to organize chemistry handouts according to the format explained in class. Binders will be checked and graded at the end of each unit.



- *Two different colored writing utensils:* Students will frequently correct their own work and their peers' work. Therefore, they need two different colored writing utensils (one for solving problems and one for correcting them). Students should complete their work in either pencil, black pen, or blue pen. They may choose any color for correcting work.
- *Internet access:* Students will need internet access to complete their weekend homework assignment, which is to review the week's vocabulary with quizlet (an online flashcard program). It is strongly recommended that students set aside a regular time each Saturday or Sunday to visit the nearest library, use the internet, and spend at least one hour studying.
- *Textbook readings:* The majority of the course readings come from the textbook Prentice Hall *Biology*. This textbooks will remain in class and be available during school hours for student use.
- *Chromebooks:* Students will bring their charged chromebooks to class every day. They will use them to check their email, complete daily exit tickets, and engage in computer-based simulations.
- *Google Classroom:* All course resources will be posted on Google Classroom. Students who are absent will complete the list of required items posted daily on Google Classroom.

Course Structure: This course facilitates learning through lectures, note-taking, labs, group problem-solving, projects, scientific texts, and digital resources (such as computer simulations and videos). Students will develop strong textbook reading, note-taking skills, and scientific writing skills. In-class demonstrations, group work, hands-on activities, and presentations will also be frequent components of this course.

Course of Study:

Unit	Topic	Duration	Description
1	Nature of Science	week	Students will learn to apply the process of scientific investigation and design, conduct, communicate about and evaluate investigations by learning about the scientific method, graphing skills, unit conversion, and lab safety.
2	Ecology	1 week	Students will study the structure and function of carbohydrates, lipids, proteins, and nucleic acids.
3	Cell Structure	2 weeks	Students will compare and contrast eukaryotic and prokaryotic cells, describe the function of various organelles, and explain in detail how the cell membrane regulates the passage of materials in and out of cells.



4	Cell Growth	2 weeks	Students will describe the phases of the cell cycle, illustrate and narrate each stage of mitosis, and explain how aberrations in cell cycle progression lead to cancer.
5	DNA	2 weeks	Students will describe in detail the structure of DNA and how it lends itself to the transfer of genetic information from one generation to the next. Students will explain and illustrate the steps of DNA replication.
<i>Quarter 1 final on</i>			
6	Protein Synthesis	2 weeks	Students will describe transcription and translation, the processes that facilitate information flow from DNA to RNA to proteins.
7	Genetic Engineering	1 week	Students will understand how recombinant DNA technology can be used to influence the traits of organisms.
7	Viruses	2 weeks	Students will explain the basic structure of a virus, compare and contrast lytic and lysogenic viral replication, and complete an in-depth study of HIV pathogenesis.
8	Digestive and Excretory Systems	1 week	Students will examine the organs that make up the digestive system and the chemistry of how they harness the nutrients in food and eliminate waste.
9	Circulatory and Respiratory Systems	2 weeks	Students will examine the organs that make up the circulatory and respiratory systems and how they maintain a steady supply of oxygen in the body. Students will also study the composition and chemistry of blood.
<i>Quarter 2 final on</i>			
Semester 2: Chemistry			
1	Properties of Matter	1 week	Students will distinguish between physical and chemical properties and use them to classify substances.
2	States of Matter	1 week	Students will study the molecular-level chemistry behind the three states of matter (solid, liquid, gas).



3	Elements, Compounds, and Mixtures	1 week	Students will distinguish between elements, compounds, and mixtures and explain various techniques for separating mixtures into their constituent parts.
4	Introduction to Atoms	1 week	Students will study the history of the development of the atomic model, including the contributions of Thomson, Rutherford, and Bohr. They will summarize the modern concept of atomic structure.
5	The Periodic Table	2 weeks	Students will study how elements are organized into the periodic table. They will practice using the periodic table as a tool to access information about a given element, such as its atomic mass and chemical reactivity.
6	Chemical Bonding	2 weeks	Students will compare and contrast ionic, covalent, and metallic bonding in terms of the arrangement of bonding electrons and the properties of the bonded material.
<i>Quarter 3 final on</i>			
7	Chemical Reactions	3 weeks	Students will classify chemical reactions into one of five major categories. They will also practice writing and balancing chemical equations.
8	Chemical Compounds	3 weeks	Students will study how to name chemical compounds and interpret chemical formulas.
9	The Chemistry of Living Things	3 weeks	Students will study the structure and reactivity of the carbon-based molecules that build living organisms.
<i>Quarter 4 final on</i>			

Course Specific Student Expectations:

- Students will demonstrate REACH values at all times.
- Students will follow the rules in accordance with Gompers Preparatory Academy handbook.
- Students will adhere to class norms when discussing opposing opinions with peers.
- Students will come to class prepared every day.
- Students will remain in their seats, unless given permission by an adult in the room.
- Students will complete their work in a timely and legible manner.



- Students will effectively use their resources (teachers, peers, textbooks, and internet sources).
- Late Work Policy for All 9th Grade Classes:
 - If you do not hand in your work on its due date, you must attend Mandatory Academic Counseling (MAC) on that day and submit it to your teacher the following day for full credit. If you submit your work the following day but do not show up for MAC, you will receive 50% credit at best.
 - If you attend MAC, but turn in your work two days after the due date, you will receive 50% credit at best.
 - Work that is late more than three days after the due date will not be accepted.
 - Please note that your responsibilities as a college prep student supercede any additional commitment you have made as a student athlete or other extracurricular activities.
- Any work submitted without an MLA heading or a name will be deducted by 10%.

Course of Study:

ECOSYSTEMS: Interactions, Energy and Dynamics (9 weeks)

Content Standards	Learning Objectives	Key Assignments/Exams
<p><u>HS-LS2</u> Ecosystems: Interactions, Energy, and Dynamics</p> <ul style="list-style-type: none">• HS-LS 2-2. 2-3 & 2-4: The Biosphere: Ecology, Energy Flow, & Cycles of Matter• HS-LS 2-5 & 2-8: Ecosystems and Communities: Community Interactions, Biomes, & Climate• HS-LS 2-6: Populations: How Population Grow, Limits to Growth, & Human Population Growth• HS-LS 2-7: Human Impacts: Renewable and Nonrenewable resources, Biodiversity,	<ul style="list-style-type: none">❑ Students will be able to use mathematical representations to illustrate the cycling of matter and flow of energy within ecosystems.❑ Students will be able to use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems at different scales.❑ Students will use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.❑ Students will evaluate evidence for the role of group behavior on individual and species' chance to survive and reproduce.❑ Students will develop models to	<ul style="list-style-type: none">• 6 Weekly Quizzes• Water Lab• Create a food web• Energy Pyramid model• Biodiversity Presentation• Population Dynamics Lab• Owl Pellet Lab• QUARTER FINAL (October 20th)



Planning for the Future	<p>illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.</p> <ul style="list-style-type: none">❑ Students will evaluate claims, evidence and reasoning that the complex interactions in ecosystem maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.❑ Students will design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	
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MOLECULES TO ORGANISMS: Structures and Processes (9 weeks)

Content Standards	Learning Objectives	Key Assignments/Exams
<p><u>HS-LS1</u> From Molecules to Organisms: Structures and Processes</p> <ul style="list-style-type: none">• HS-LS1-2, 1-3, & 1-4: Cell Growth and Division: Mitosis & The Cell Cycle• HS-LS1-5: Photosynthesis• HS-LS1-6: Cellular Respiration• HS-LS1-6: The Chemistry of Life: Properties of Water & Carbon Compounds	<ul style="list-style-type: none">❑ Students will develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.❑ Students will plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.❑ Students will use models to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.❑ Students will use models to illustrate how photosynthesis transforms light energy into stored chemical energy.❑ Students will use models to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and	<ul style="list-style-type: none">• 8 Weekly Quizzes• Leaf Disc Lab• Cellular Respiration Yeast Lab• Photosynthesis & Cellular Respiration video creation• Mitosis Project• Bean Plant Lab• QUARTER FINAL (January 23rd)• Semester 1 Lab Report (January 29th)



	<p>oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy</p> <ul style="list-style-type: none">❑ Students will construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	
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HEREDITY: Inheritance and Variations of Traits (9 weeks)

Content Standards	Learning Objectives	Key Assignments/Exams
<p><u>HS-LS3</u> Heredity: Inheritance and Variation of Traits</p> <ul style="list-style-type: none">• HS-LS1-1 & 3-1: DNA: Structure & Function, Human Heredity, & Human Chromosomes• HS-LS3-2: Genetic Variations: Meiosis, Mutations, & Genetic Engineering• HS-LS3-3: Punnett Squares: Probability & Monohybrid Crosses	<ul style="list-style-type: none">❑ Students will construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.❑ Students will understand the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.❑ Students will make and defend a claim based on evidence that inheritable genetic variations may result from 1) new genetic combinations through meiosis, 2) viable errors occurring during replication, and/or 3) mutations caused by environmental factors.❑ Students will apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.	<ul style="list-style-type: none">• 8 Weekly Quizzes• Create a DNA model• DNA Extraction Lab• Alien Lab• Genetic Disorders Presentation• Monohybrid Crosses• QUARTER FINAL (April 10th)

EVOLUTION: Unity and Diversity (9 weeks)



Content Standards	Learning Objectives	Key Assignments/Exams
<p>HS-LS4 Biological Evolution: Unity and Diversity</p> <ul style="list-style-type: none">• HS-LS4-1 Darwin's Theory of Evolution• HS-LS4-2, 4-3, & 4-4: The Evolution of Populations: Genetic Drift & Speciation• HS-LS4-5: The History of Life: Fossil Records, Evolution of Multicellular Life, & Patterns of Evolution	<ul style="list-style-type: none">❑ Students will communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.❑ Students will construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.❑ Students will apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.❑ Students will construct an explanation based on evidence for how natural selection leads to adaptation of populations.❑ Students will evaluate the evidence supporting claims that changes in environmental conditions may result in 1) increase in the number of individuals of some species, 2) the emergence of new species over time, and 3) the extinction of other species.❑ Students will create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	<ul style="list-style-type: none">• 8 Weekly Quizzes• Natural Selection Lab• <i>Your Inner Fish</i> written assignment• Evolution Debate• Conservation Biology Lab• QUARTER FINAL (June 15)• Semester 2 Lab Report (June 21)

Accommodations/Modification and Supports:



Any student who requires accommodations, modifications or additional supports should contact me as early as possible so that we may arrange accommodations, modifications and supports.

GPA Student Expectations-

School-wide Attendance: All students are expected to be punctual and in their classroom seat, ready to learn for each day. Under California law (Ed. Code 48200) all children between the ages of six and eighteen are required to be enrolled and in regular attendance at school. GPA families know that school attendance is the critical first step to make sure that each student receives an education that will help them on their path to college. Students cannot learn what they need to be prepared for the next grade level, if they are not in school. The more absences from school a student has, the more they fall behind in their classes and the more difficult it will be to make it to college.

Planner Use: All students are expected to write all assignments in their GPA planner daily. Your first GPA planner will be provided by the school to support organization and time management.

Homework Completion: As a school working toward college preparation, all GPA students are expected to complete their daily/weekly assignments. Students who fail to complete their homework assignments on time, and are unexcused, will be required to attend lunch and after school tutoring support daily until completed. Until all assignments are completed, students may not be eligible for athletics, clubs, and other extracurricular activities.

Electronic Device Policy: Cell phones, smart watches, and other electronic communication devices that can send and/or receive data are not permitted to be visible, heard, or used in any manner during school hours except by approval of school authorities. Any violation and/or disruption of the learning process will result in the confiscation of the item. The parent/guardian must pick up the confiscated item from the Office of Student Conduct or the teacher.

Computer/Internet Usage Policy: Students may not use computers and/or the GPA network without proper adult supervision. The teacher/staff will choose resources on the Internet that are appropriate for classroom instruction and/or research for the needs, maturity, and ability of their students.

Acceptable Use-

- Access to any site that provides information relevant to current class assignments
- Access to college or university websites
- Use of teacher approved educational software (games, instructional tools, etc.)



Academic Integrity: Honest behavior is an expectation for all students at Gompers Preparatory Academy. Our goal is to create and maintain an ethical academic atmosphere. Acts of academic dishonesty that will not be tolerated at GPA are listed below:

- Cheating on any classroom assignment, test, or quiz
- Plagiarism - copying or representing another's ideas, words, or work as one's own, without properly citing the source. Plagiarism includes the misuse of published material, electronic material, and/or the work of other students. The original writer who intentionally shares his/her work for another to copy, without the permission of the teacher, is also engaged in plagiarism
- Fabrication (any falsification or invention of date, citation, or other authority in an assignment); theft or alteration of materials
- Unauthorized collaboration
- Unauthorized use of electronic devices

Students found in violation of GPA's Academic Integrity Policy will be disciplined appropriately, which may lead to formal suspension. Consequences for offenses may include, but are not limited to, detention, *lowering of academic and citizenship grade and/or suspensions/exclusion from extracurricular activities.*

Standards/Format for Writing Papers - MLA Format:

The standard format for all papers follows the MLA formatting rules:

1. Typed, double-spaced: TIMES NEW ROMAN, 12 font, including title
2. Heading: 4 lines - UPPER LEFT corner
 - Student name: "Sammy Gompers"
 - Teacher name: Ms. Teacher
 - Course name, period: English I, Period 3
 - Date 06 February 2009
3. All pages numbered: upper right corner, last name and page number; no punctuation, no "p." or "pg."
4. Title: centered, upper and lower case
5. Work Cited/ Documentation Format: It is necessary to credit any source that is used in a paper or project. Plagiarism is considered cheating. All sources must be documented. Citing sources in a paper must be thorough and accurate. MLA formatting for in-text citations and works cited is mandatory.

Important Dates:

Quarter 1:

- Q1 Finals Week: October 23rd and 27th
- Parent Conferences: October 23rd - 27th
- End Date: October 30th



Quarter 2:

- Q2 Finals Week: January 22nd - 26th
- Parent Conferences: January 16th - 22nd
- End Date: January 31st

Quarter 3:

- Q3 Finals Week: April 9th - 13th
- Parent Conferences: April 16th - 20th
- End Date: April 23rd

Quarter 4:

- Q4 Finals Week: May 29th - June 1st
- End Date: June 26th

Student Signature : _____ Parent/Guardian Signature: _____

Date: _____

