



Course Title: biochemistry

Instructor: Ms. Keenan

Instructor Availability: Tuesday and Thursday, 3:15pm-4:15pm

Instructor Contact: ckeenan@gomperscharter.org/203-843-3831/room 22

Course Description:

The first semester of this course is devoted to the study of biology and the second semester focuses on chemistry. The biology semester is intended to explore topics covered in the freshman-year biology course in more depth and to introduce new, more advanced topics. The semester will begin with a review of the macromolecules that build all living things. Then, students will complete an in-depth study of cell structure, cell growth and division, and the effect of cancer on these processes. Next, students will explore the “central dogma” of molecular biology, which states that information flows from DNA to RNA to proteins in all living organisms. Students will study how this concept can be harnessed and manipulated in the field of genetic engineering. Finally, students will culminate their study of biology with medically-based units on disease-causing microorganisms and human anatomy and physiology.

The chemistry semester of this course is intended to prepare students to take a full-year course in chemistry during their junior year. Students will investigate the properties and organization of matter, atomic structure, the periodic table, chemical reactions, and chemical bonding. Emphasis will be placed on the development of vocabulary and overarching chemistry concepts, which will serve as a framework for students to dive deeper into their study of chemistry next year. This course emphasizes textbook-reading and note-taking skills, group collaboration, scientific communication, and creating visual/artistic representations of scientific information. Students will engage in laboratory investigations and hands-on activities throughout the duration of the course.

GPA Grading Guidelines:

Category	Assignments	Percentage of final grade
Classwork	<ul style="list-style-type: none">• Written lab reports• Group work• Exit tickets• Notebook and binder checks	30%
Demonstrations of Learning	<ul style="list-style-type: none">• Quizzes• Unit tests	35%



Homework/Independent Learning	<ul style="list-style-type: none">Weekly homework packets	10%
Quarter Finals	<ul style="list-style-type: none">Cumulative exam based on all units covered throughout the quarter	25%

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 will have a binder organized in the GPA format with a section devoted to biochemistry. 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 doing assignments 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 weekly vocabulary set 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 first semester of the course will incorporate readings from *Biology* (Miller and Levine, 2014). The second semester will incorporate readings from *Physical Science* (Holt, Rinehart, and Winston, 2007). Students will receive printed copies of each reading, and they will be expected to highlight and annotate them according to the format discussed in class. Students will store their reading packets in their binders.
- **Chromebooks:** Students will bring their charged chromebooks to class every day. They will use them to complete daily exit tickets and engage in computer-based simulations.
- **Google Classroom:** All course resources will be posted on Google Classroom. Students will receive a code to join our class.

Course Structure:

This course facilitates learning through lectures, note-taking, labs, group problem-solving, projects, reading scientific texts, and using digital resources (such as computer simulations and videos). Students will develop strong textbook reading and note-taking skills. They will also frequently engage in group work and hands-on activities.



Course of Study:

Semester 1: Biology			
Unit	Topic	Duration	Description
0	Science Bootcamp	1 week	Students will review the basic skills needed to study science, including lab safety, graphing, and the scientific method.
1	Macromolecules	1 week	Students will study the structure and function of carbohydrates, lipids, proteins, and nucleic acids.
2	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.
3	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.
4	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 biology units 0-4</i>			
5	Protein Synthesis	2 weeks	Students will describe transcription and translation, the processes that facilitate information flow from DNA to RNA to proteins.
6	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 biology units 5-9</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 chemistry units 1-6</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 chemistry units 7-9</i>			

Assessment:

All units will end in a unit test and a notebook/binder check. Students can also expect weekly quizzes, daily exit tickets, weekly homework packets, and a variety of in-class group-based assignments. Written lab reports (at least two pages in length) and oral presentations will be required throughout the course. Students will take a final exam at the end of each quarter.

Course-Specific Student Expectations:

- **Study and homework commitment:** Students are expected to complete one hour minimum of biochemistry homework every day after school. If the assigned work takes less than one hour, students should spend the remainder of the time reviewing their notes. A minimum of one hour is also expected during the weekend.
- **Late work policy:** Late homework packets, exit tickets, lab reports, and other class assignments will receive an automatic 20% grade deduction. Assignments more than three days late will NOT be accepted, unless there are exceptional circumstances preventing the student from completing work AND the student has emailed Ms. Keenan describing them. Late work should be submitted to the late/absent bin in the front of the classroom.
- **Absent policy:** Students who are absent from school must obtain copies of the assignments they missed and the checklist from the absent folders (located in the front of the classroom) for each day they were out. Students have the number of days they were absent to submit their makeup work without being marked late. For instance, if a student is absent on Monday and Tuesday, she has two days after returning to school to submit her work (she comes back on Wednesday, so she has until Friday to submit her assignments). If a student is absent for a test, quiz, or lab, the student must email Ms. Keenan to make arrangements to make up the missed activity after school. All tests, quizzes, and labs must be made up within one week of the student's return to class or they will earn grades of "zero."
- **Extra help:** Biochem Café will take place from 3:15pm-4:15pm on Tuesday and Thursday. This is a time for students to work with friends on homework, enjoy a snack, and receive one-on-one tutoring. Ms. Keenan and qualified peer tutors will be available for 15-minute appointments. Students can sign up for time slots beginning at 3:15pm each day on a first-come, first-serve basis.



- **Extra credit:** There are two opportunities for extra credit in this class. The first is being a top-five finisher on the Kahoot review game before each unit test (earns 5% bonus on unit test). The second is being part of the table group that earned the most “chem points” in a given week (earns 5% bonus on Friday quiz/test). There will be no other extra credit opportunities. Do not approach Ms. Keenan at the end of the quarter and ask for additional extra credit opportunities as a last-ditch attempt to raise your grade; instead, ask questions throughout the semester, establish a regular study schedule, and come to Biochem Café!
- **Test and quiz retakes:** In general, there will NOT be an opportunity to retake tests or quizzes. The grade you earn the first time is your final grade. If exceptional circumstances affected your performance on a test or quiz, you can send Ms. Keenan an email describing what happened, and Ms. Keenan may approve a quiz or test retake.
- **Food policy:** There will be NO EATING in the science classroom in compliance with California safety regulations. Students may not bring food or beverages to class.
- **Friday assessments:** Students should plan to take either a quiz or a unit test every Friday. Frequent assessment helps students to monitor their own progress and seek help immediately after earning a low grade.
- **Exit tickets:** Students will complete a short 5-question “exit ticket” at the end of most lessons. This is like a mini-quiz - students will be able to use their notes, but they will not be allowed to talk to other students. They will immediately see their score and get feedback on incorrect answers. At the end of each week, one exit ticket from that week will randomly be chosen to enter in the gradebook.
- **Interactive notebooks:** Students will maintain notebooks that contain a mix of Cornell notes, taped-in handouts and foldables, drawings, and color-coded diagrams. These notebooks will be handed in and graded at the end of each unit. *If a student loses their notebook, it is their responsibility to obtain a new one. They will NOT be excused from the next graded notebook check - they will either need to re-create the missing parts of their notebook using handouts from the absent bin, or earn a grade of “zero.”*
- **3-strike policy:** Behavior that does not follow GPA culture/REACH values will be handled with a 3-strike system. The first incident in a given class period (such as talking out of turn) will result in a warning, the second incident will result in a phone call home, and the third incident will result in a referral to the Office of Student Conduct (OSC). The citizenship grade of any student who is referred to OSC will drop a full letter grade. For example, if the student generally behaved at the “G” level (good) during the quarter, the OSC referral lowers their grade to an “S” (satisfactory). To support positive energy and a fresh start, “strikes” are renewed each day.
- **Class preparedness:** Students are expected to bring their GPA binder, bio chemistry notebook, planner, charged chromebook, and two writing utensils in different colors to class each day. Failure to meet this expectation will result in a “strike” (see three-strike policy).



- **No-name policy:** Work submitted with no name or an illegible name will be placed in the lost and found bin and earn a grade of “zero.” Students may retrieve their work from the lost and found bin, write their name on it, and re-submit it to the absent/late work bin. It will earn a 20% point deduction for being late.
- **Tardy policy:** Students who arrive to class after honor must write their name and the time they arrived on the “tardy log” (taped to the whiteboard). If they have a pass, they will write their name, the word “pass,” and leave their planner on the lab bench by the whiteboard for Ms. Keenan to check. Students without a pass must stay after school Tuesday or Thursday and make up the number of minutes they were late rounded up to the nearest 10. For instance, if they are 4 minutes late, they must make up 10 minutes; if they are 12 minutes late, they must make up 20 minutes. If students do not make up tardy time after school, their citizenship grade will be lowered one letter grade for the quarter.
- **Lost and found:** Any papers, notebooks, or other materials that are left behind in Ms. Keenan’s classroom will be placed in the lost and found bin. THE CONTENTS OF THE BIN ARE THROWN OUT AT THE END OF EVERY MONTH, so check it immediately if you are missing something.
- **Leaving the classroom:** Students must obtain permission from Ms. Keenan before leaving the classroom for anything, whether they are blowing their nose, using the bathroom, or going to the nurse. This is for safety reasons: during my class, I am responsible for knowing your location at all times.
- **Material use:** Since this is a hands-on class, students will have the opportunity to use supplies such as colored pencils, scissors, tape, calculators, timers, and lab equipment. Students are expected to treat ALL materials with respect, which means handling them gently, following all instructions, cleaning up, and ensuring that everything is ready for the next class. Failure to adhere to this policy will result in a “strike” - see “3-strike policy.”

Accommodations/Modification and Supports:

Any student who requires accommodations, modifications or additional supports should contact me as early as possible so that we can make appropriate arrangements.

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



GOMPERS PREPARATORY ACADEMY *A UCSD Partnership*

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Quarter 4:

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

Student Signature : _____

Date: _____

Parent/Guardian Signature: _____

Date: _____

