



Course Title: Integrated Science - 7th Grade

Instructor: Mr. Malfavon

Instructor Availability: Tuesday/Wednesday 3:15 - 4:00

Instructor Contact: bmalfavon@gomperscharter.org Room 41

Course Description:

Integrated Science draws from research done in biology, engineering, physics, mathematics, and chemistry to facilitate a comprehensive understanding of the world. The course encourages curiosity and provides fundamental skills to enhance critical thinking and problem solving. **Integrated Science** presents students with an opportunity to develop a passion for science and examine current real world problems.

GPA Grading Guidelines:

| Category | Grading Criteria | Percentage |
|-------------------------------|---|------------|
| Classwork | <ul style="list-style-type: none">Completion/Quality <p>(Must have a minimum of 1 weekly grade)</p> | 30% |
| Demonstrations of Learning | <ul style="list-style-type: none">Key Course Assignments <p>(See course syllabus for Unit Key Assignments)</p> | 35% |
| Homework/Independent Learning | <ul style="list-style-type: none">Any work assigned to a student in which they complete on their own outside of class. <p>(Must have a minimum of 1 weekly grade)</p> | 10% |
| Quarter Finals | <ul style="list-style-type: none">Quarter finals are course specific, standards based exams that cover content from the 9 week quarter. | 25% |

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

Prerequisites: none

Course Materials: Articles, books, readings, Science Notebook, Access to internet, Google Classroom, Student gmail account



Course Structure: The Life Science course will include lectures, lab experiments, and interactive lessons that are supplemented by readings, writing, and academic discussions.

Course of Study:

Scientific Method (*Length of unit - Weeks 1-2 , 2 WEEKS - 8 LESSONS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|--|---|---|
| <p><u>MS-ETS1.A: Defining and Delimiting Engineering Problems</u></p> <p>The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1- 1)</p> <p><u>MS-ETS1.B: Developing Possible Solutions</u></p> <p>A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. (MS-ETS1-4) There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2), (MS-ETS1-3)</p> <p>Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3)</p> <p>Models of all kinds are important for testing solutions. (MSETS1-4)</p> | <p>Understanding how to think like a Scientist</p> <p>Developing Inquiry and Reasoning</p> <p>Understanding and applying the Scientific Method (Claim, Evidence, Reasoning)</p> | <p>Open House Projects:</p> <p>Invention Project</p> <ul style="list-style-type: none">- Student will create an invention of their choosing to help solve a problem in their life.- (Rubric provided) <p><u>STEM Labs using the Scientific Method:</u> (Engineering emphasis)</p> <ul style="list-style-type: none">- Penny Lab- Gummy and toothpick bridges- Spaghetti towers <p>QUARTER FINAL</p> |

From Molecules to Organisms: Cells (*Length of unit - Weeks 3-4 , 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|---|--|---|
| <u>MS-LS1.A: Structure and Function:</u> All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) | Understanding the levels of organization and Cell Theory. Identifying the difference between Biotic and Abiotic Understanding the difference between Unicellular and Multicellular Organisms. Conduct an investigation and describe using evidence that all living things are made of cells and that the cell is the smallest unit of life. Understanding the similarities and differences between plant and animal cells. | <ul style="list-style-type: none">- Inquiry Lab: Observing the microscopic world of cells- Beginning their Scientific Notebook: Students will begin working on their notebooks and will continue adding to it throughout the year. Quiz covering: (study guide provided) <ul style="list-style-type: none">- Cell theory- Biotic v. abiotic- Multi v. unicellular- Plant v. animal cells |

From Molecules to Organisms: Organelles (*Length of unit - Weeks 5-6, 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|---|--|---|
| <u>MS-LS1.A: Structure and Function</u> Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) | Understand the structure, function, and relationship of each organelle to the whole cell. Understanding the key differences between plant and animal cells based on structure and function. | Build a Cell: <ul style="list-style-type: none">- construct a cell out of playdough- Student will be able to explain through writing about each organelle functions and its relationship to the entire cell. |



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| | | Quiz and Study Guide Covering: <ul style="list-style-type: none">- Organelles Structure and Function- How the cell functions as a unit. |
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From Molecules to Organisms: Photosynthesis and Cell Diseases (*Length of unit - Weeks 7-8, 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
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| <p><u>MS-LS1.C: Organization of Matter and Energy Flow in Organisms</u></p> <p>Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1- 6)</p> <p>Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7)</p> | <p>Understand the concept of Energy.</p> <p>Understand how plants use energy to create food.</p> <p>Construct a scientific explanation based on evidence for the role of photosynthesis in the flow of energy into and out of organisms.</p> | <p>Photosynthesis Lab:</p> <ul style="list-style-type: none">- Chemical formula- Autotroph <p>Cell Disease Group Project:</p> <ul style="list-style-type: none">- Internet research- Presentation <p>Stem Cell Investigation: The life of Henrietta Lacks</p> <p>QUARTER FINAL</p> |
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Stem Cells, Osmosis/Diffusion, Body Systems (*Length of unit - Weeks 9-16, 7 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
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| <p><u>MS-LS1.A: Structure and Function</u></p> <p>In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)</p> | <p>Understand the difference between Osmosis and diffusion, and the importance they play in cell survival.</p> <p>Understand and explain through evidence that the body is a system of interacting subsystems composed of groups of cells.</p> | <ul style="list-style-type: none">- Gummy Bear Diffusion lab- Osmosis vs. Diffusion Quiz <p><u>Integumentary:</u></p> <ul style="list-style-type: none">- Skin Disease Project- Investigation Lab: Sunscreen <p><u>Skeletal System:</u></p> <ul style="list-style-type: none">- Assembly and labeling- Observation Lab: Noticing differences in various animal skeletons- Major bones of the body quiz <p><u>Muscles:</u></p> <ul style="list-style-type: none">- Fatigue Lab- Flexors vs. Extensors lab- Investigation project: Steroids and professional athletes- Blinking Lab: voluntary or involuntary? <p><u>Circulatory:</u></p> <ul style="list-style-type: none">- Classroom as a Heart activity <p><u>Respiratory:</u></p> <ul style="list-style-type: none">- Respiratory fitness lab |
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Ecosystems, Interactions, and Dynamics: Ecology and Biomes (*Length of unit - Weeks 20-22, 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
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| <u>MS-LS2.A: Interdependent Relationships in Ecosystems</u> Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1) In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2- 1) Growth of organisms and population increases are limited by access to resources. (MS-LS2-1) | <ul style="list-style-type: none">- Organisms, and populations of organisms are dependent on their environmental interactions both with other living things and nonliving factors.- All require food, water, oxygen or other resources.- 5 Major Biomes- Weather v. Climate | Backyard Ecosystem: <ul style="list-style-type: none">- create an ecosystem in a bottle. Biomes: Travel Brochure Project QUARTER FINAL |

Ecosystems, Interactions, and Dynamics: Food Webs and Symbiotic Relationships (*Length of unit - Weeks 23-24, 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|---|--|--|
| <u>MS-LS2.A: Interdependent Relationships in Ecosystems</u> Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each | <ul style="list-style-type: none">- Energy cycles through an ecosystem- Show energy transferred between producers, consumers, and decomposers as the 3 groups interact within an ecosystem.- Species involved in these competitive, predatory, and | <ul style="list-style-type: none">- Create a food web and explain how energy cycles through an ecosystem.- Poster Project: Animal/plant symbiotic |



organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

MS- LS2.B: Cycle of Matter and Energy Transfer in Ecosystems

Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

MS-LS2.C: Ecosystems Dynamics, Functioning and Resilience

Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

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relationship

Quiz on the energy cycles in an ecosystem.
- Labeling the organisms in the cycle.



Ecosystems, Interactions, and Dynamics: Natural Selection and Adaptations (*Length of unit - Weeks 25-26, 2 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|---|--|---|
| <p><u>MS-LS4.B: Natural Selection</u></p> <p>Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)</p> <p>In artificial selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring. (MS-LS4-5)</p> <p><u>MS-LS4.C: Adaptation</u></p> <p>Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)</p> | <ul style="list-style-type: none">- Animals and plants are suited for their specific environment.- The differences between physical, behavioral and structural adaptations in animals.- Students will know that populations can change over time due to changes in the environment.- Students will be able to construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. | <p>Darwin's Finches Lab: Beak size</p> <p>Evade, Expire, and Endure Lab</p> <p>Will You Survive A Million Years online activity</p> <p>Quiz: Essay</p> <p>Students will be given a scenario and will have to explain how an animal or plant population will be able to survive the environmental changes.</p> |

Human Impact on Earth's Resources (*Length of unit - Weeks 27-35, 8 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
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| <p><u>MS-ESS3.A: Natural Resources:</u></p> <p>Humans depend on Earth's land, ocean, atmosphere, and biosphere for different</p> | <p>Natural Resources:</p> <ul style="list-style-type: none">- Land, ocean, atmosphere, biosphere- Minerals, fresh water and | <p>Investigation Project and Debate: Renewable Resources</p> |



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| <p>resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes</p> <p><u>MS-ESS3.C: Human Impacts on Earth Systems</u> Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes in Earth's environment can have different impacts for different living things.</p> <p><u>MS-ESS4.D: Global Climate Change:</u> Human activities, such as the release of greenhouse gases from burning fossil fuels are major factors in the current rise in Earth's mean surface temperature. Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding human behavior and applying that knowledge wisely in decisions and activities.</p> | <p>biosphere resources are limited.</p> <ul style="list-style-type: none"> - Resources are distributed unevenly around the planet as a result of past geologic processes. - Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats. <p>Global Climate Change:</p> <ul style="list-style-type: none"> - Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature. - Fossil Fuels, greenhouse gases, renewable energy, | <p>Plastic Consumption Observation Lab:</p> <ul style="list-style-type: none"> - How much plastic do you use? <p>*Plastic Paradise Documentary</p> <p>Plastic Lifespan Data Investigation:</p> <ul style="list-style-type: none"> - How long do certain types of plastics exists on the Earth? <p>Environmental Activist Poster</p> <p>Renewable energy persuasive essay assignment</p> <ul style="list-style-type: none"> - Worked on both in class and at home. <p>QUARTER FINAL</p> |
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Matter and Its Interactions (*Length of unit - 36-39, 3 WEEKS*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
|---|---|--|
| <p><u>MS-PS2.A: Forces and Motion</u></p> <p>For any pair of interacting</p> | <p>Students will be able to explain the following terms and be able</p> | <p>Labs:</p> <p>How do toys react on earth</p> |



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| <p>objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction (Newton's third law). (MS-PS2-1)</p> <p>The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion. (MS-PS2-2)</p> <p>All positions of objects and the directions of forces and motions must be described in an arbitrarily chosen reference frame and arbitrarily chosen units of size. In order to share information with other people, these choices must also be shared. (MSPS2-2)</p> <p><u>MS-PS3.C: Relationship Between Energy and Forces</u></p> <p>When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. (MS-PS3-2)</p> | <p>to provide examples from the physical world:</p> <ul style="list-style-type: none"> - Force - Acceleration - Mass - Gravity - Newton's 3 Laws <p>As a group, students will create a car out of everyday objects. They will then be able to use one of Newton's 3 laws to provide evidence for a claim to show how that particular law allows the car to move or not.</p> | <p>vs. space?</p> <ul style="list-style-type: none"> - Does mass change depending on gravitational pull? - Ball n cup - Balloon Rockets <p>Newton's Cars Group Project: Students must choose one of Newton's 3 laws to explain why their car moves.</p> <p>QUARTER FINAL</p> |
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Engineering (*Last week of school*)

| Content Standards | Learning Objectives | Key Assignments/Exams |
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| <p><u>MS-ETS1.A: Defining and Delimiting Engineering</u></p> | <p>Students will learn and about the field of architecture and design</p> | <ul style="list-style-type: none"> - Build a School Project |



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| <p><u>Problems</u></p> <p>The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1- 1)</p> <p><u>MS-ETS1.B: Developing Possible Solutions</u></p> <p>A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. (MS-ETS1-4)</p> <p>There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2), (MS-ETS1-3)</p> <p>Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3)</p> <p>Models of all kinds are important for testing solutions. (MSETS1-4)</p> | <p>and how it shapes the world in which they live.</p> <ul style="list-style-type: none">- They will understand scale and architectural language. | <ul style="list-style-type: none">- Watch "Abstract" documentary |
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Course Specific Student Expectations:

What do you expect of your students?

- Attend school daily.
- Treat everyone at school (both teachers and peers) with respect and kindness.
- Uphold school culture at all times.
- Maintain Student Science Notebook (provided by your teacher)



- Communicate with parents about what assignments are due and what behavior is expected of them in class.
- Communicate with the teacher if they are going to be absent and ask for the work they will be missing ahead of time.
- ***Late Homework Policy:**
 - Students will be assigned homework that should be successfully completed with little to no assistance. Homework will be assigned in advance at the beginning of each week. Assignments turned in late will be graded starting at 50%.

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: _____

