**Challenger Middle School Course Syllabus Course Name: Science Grade: 8**

**Quarter 1 Start Date: August 30, 2023 Quarter 1 End Date: November 3, 2023**

**Quarter 2 Start Date: November 6, 2023 Quarter 2 End Date: January 30, 2024**

**Quarter 3 Start Date: January 31, 2024 Quarter 3 End Date: Apr 12, 2024**

**Quarter 4 Start Date: Apr 15, 2024 Quarter 4 End Date: Jun 14, 2024**

**8th Grade Science**

**CEDARS Course Code: 03238**

**Course Code: 800SCI**

**Certificated Teacher: Allison Sampson**

**Grading:** A, B, C, D, F

**Course Description:**

Educurious is a hands-on, project-based curriculum. Students will explore answers to essential questions, collaborate, build contemporary skills, and practice problem-solving and critical thinking, while immersed in science. Students will make connections to the world through a global network of subject matter experts and mentors, who relate the curriculum to challenges in today’s workplace. They will partner with authentic audiences in creating and presenting their final products for each unit.

**Text/Resources Provided:**

Educurious

**Online resources:**

Canvas

**Common Core Standards Addressed In This Course :**

**Quarter 1:**

**MS-LS2-4**

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

**MS-ESS3-4**

Construct an argument supported by empirical evidence for how increases in human population and per capita consumption of natural resources impact Earth’s systems.

**MS-PS2-1**

Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.

**MS-PS2-2**

Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.

**MS-PS3-1**

Construct and interpret graphical displays of data to describe the relationship of kinetic energy to the mass of an object and to the speed of an object.

**MS-PS3-2**

Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

**MS-PS3-5**

Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**MS-ETS1-1**

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

**MS-ETS1-4**

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

**Quarter 2:**

**MS-PS2-3**

Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

**MS-PS3-2**

Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

**MS-PS2-5**

Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

**MS-ETS1-3**

Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

**Quarter 3:**

**MS-ESS1-2**

Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

**MS-ESS1-3**

Analyze and interpret data to determine scale properties of objects in the solar system.

**MS-ETS1-1**

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful

solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

**MS-ETS1-2**

Evaluate competing design solutions using a systematic process to determine how well they met the criteria

and constraints of the problem.

**MS-ETS1-4**

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or

process such that an optimal design can be achieved.

**MS-PS4-1**

Use mathematical representations to describe a simple model for waves that includes how the

amplitude of a wave is related to the energy in a wave.

**MS-PS4-2**

Develop and use a model to describe that waves are reflected, absorbed, or transmitted through

various materials.

**MS-PS4-3**

Integrate qualitative scientific and technical information to support the claim that digitized signals are a

more reliable way to encode and transmit information than analog signals.

**Quarter 4**

**MS-LS1**: From Molecules to Organisms: Structures and Processes

**MS-LS1-4**

Use argument based on empirical evidence and scientific reasoning to support an explanation for how

characteristic animal behaviors and specialized plant structures affect the probability of successful

reproduction of animals and plants, respectively.

**MS-LS1-8**

Gather and synthesize information that sensory receptors respond to stimuli by sending messages to

the brain for immediate behavior or storage as memories.

**MS-LS4**

Biological Evolution: Unity and Diversity

**MS-LS4-4**

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.

**MS-LS4-5**

Gather and synthesize information about the technologies that have changed the way humans

influence the inheritance of desired traits in organisms.

**MS-LS4-6**

Use mathematical representations to support explanations of how natural selection may lead to

increases and decreases of specific traits in populations over time.

**MS-ESS1-1**

Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases,

eclipses of the sun and moon, and seasons.

**Course Objectives:**

To pass and earn credit for this course, the student will demonstrate mastery of these standards through assignments, projects and/or assessments:

**Quarter 1:**

**Leave No Trace…Leave A Legacy**

**How can we enjoy and explore unique natural areas while protecting our environment?**

**Module 1**

Why are people drawn to the outdoors, especially to mountains like Rainier (Tahoma) and Everest?

**Module 2**

How do our actions impact the natural world?

**Module 3**

What actions can we take to protect our natural areas in our own community?

**Airdrop: How can we design a parachute system to safely deliver lifesaving supplies to a disaster area?**

**Module 1**

What happens when objects fall?

**Module 2**

How do you slow a falling object?

**Module 3**

How do you absorb the energy of a falling object?

**Module 4**

How will you protect your supplies?

**Quarter 2:**

**Magnetic Mission: How can we use magnetic forces to power a fun teaching toy?**

**Module 1**

What are magnets and how do they work?

**Module 2**

What does electricity have to do with magnetic forces?

**Module 3**

How can we share our learning by designing and testing a magnetic toy?

**Quarter 3**

**Mysteries of Space**

**Where would you search for life in space?**

**Module 1**

**What does our solar system look like?**

**Module 2**

**Why does our solar system look the way it does?**

**Module 3**

**What would it take to survive in space?**

**Innovative Waves**

**Is RFID technology an appropriate, effective way to improve schools?**

**Module 1**

**How are RFID chips used in everyday life?**

**Module 2**

**How do RFID chips use waves to send and receive information?**

**Module 3**

**What are the ethical issues related to using RFID chips in schools?**

**Quarter 4**

**Pesky Pests**

**Module 1**

**Why are pests such a problem?**

**Module 2**

**Why are some pests becoming indestructible?**

**Module 3**

**How can we take action against “super pests”?**

**Everlasting Summer**

**Module 2**

**Why is summer warmer than winter?**

**COURSE GRADE REQUIREMENTS**

**Course Grading Scale:**

**Standards-Based Grading:**

Grading will be standards based. All assignments are expected to be completed to standard; this is a "B". "A" is exceeding standards; demonstrating a deeper and extended understanding of the material. If tests/projects do not meet standard they will need to be revised within the grading period.

**Formative Assessment – 20%:** This includes assignments that assess student learning of a concept and may be a worksheet, team projects, or a quiz.

**Summative** **Assessment- 80% of grade:** Students **CANNOT** pass without passing the assessments. Included are: tests, essays, and projects. Assessments are directly tied to one or more standards.

**Make up/Retake policy**: All tests can be retaken until the student demonstrates mastery of the content. Retake opportunities may require extra preparation.

**Grading Scale: This year we are transitioning to a 4 point standards based scale, similar to what is used in elementary school.**

| **22-23 CHALLENGER MIDDLE STANDARDS-BASED GRADING SCALE** |
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| **SBG SCORE** | **DESCRIPTION** | **LETTER ALIGNMENT** |
| **4** | **Exceeding Standards -** Consistently meets requirements for exceptional work related to course standards and demonstrates a deep level of knowledge and skill | A80-100 |
| **3** | **Meeting Standards -** Consistently meets most requirements for proficient work related to course standards and demonstrates grade level knowledge and skills | B60-80 |
| **2** | **Approaching Standards -** Consistently meets some requirements for proficient work related to course standards and demonstrates some grade level knowledge and skills | C40-60 |
| **1** | **Attempting Standards -** With or without consistent support student is making limited progress towards standards - progress report meeting required | D20-40 |
| **0** | **Insufficient Evidence -** With consistent help, no demonstration of key standards - progress report meeting required | F0-20 |

**Academic Honesty:**

We are here to learn and grow as scholars and as such strive to produce our best original work. We will be exploring the concepts of plagiarism, cheating, and academic integrity throughout our courses.

Progress and course assignment/project completion will be evaluated at least monthly by the teacher.

**Classroom Expectations and Norms:**

If what you are doing: INTERFERES with learning, HURTS someone's heart, PREVENTS you from being your best self… You shouldn’t be doing it!

**Norms:**

* Everyone has the right to be heard.
* Be respectful while still being critical.
* No name calling.
* One person speaks at a time.
* Hold yourself and each other to high standards of excellence at all times.
* Have the humility to recognize that you do not know everything and that everyone can stand to improve.
* Recognize that everyone will start from different bases of knowledge.