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***7th Grade Science Course***

# **Course Overview**: The seventh grade science program emphasizes the skills of scientific inquiry and focuses on the processes of developing experimental plans, collecting and interpreting data, as well as how to properly publish findings/results in a conclusion. Through a rich, inquiry- based program of study, students will demonstrate scientific literacy and the use of DLP’s and 21st century skills in the physical, and life sciences. Content is delivered through an integrated approach with an emphasis on the development of major science systems, changes, and models. Students will engage in active inquiries and investigations for at least half of the instructional time to develop conceptual understanding and research/laboratory skills. Seventh grade science explores scientific innovations and milestones and studies major concepts in areas such as plate tectonics, geologic time, characteristics of light, natural processes in our solar system, and environmental science.

**This year’s Essential Questions** (designed to stimulate thought, provoke inquiry, and spark more questions):

**FIRST SEMESTER**

**Unit 1 and included in all other units: What is Science?**

* How do scientists investigate the natural universe?
* How is science the same as and different from other types of thinking?

**Unit 2 and included in all other units: Continue to develop thinking and behaving like a masterful scientist**

* What makes good scientific questions and hypotheses?
* How does the design and collection of data in an investigation contribute to the validity of a conclusion?
* What are the best ways to display data so that it can be clearly interpreted and analyzed?
* How do readers analyze and summarize scientific information?
* How do scientists collaborate, develop, and communicate scientific theories and Laws over time?

**Unit 3: Classification of Earth’s layers**

* How can Earth’s layers be described and classified using qualitative and quantitative observations?
* How do properties of Earth’s layers affect the Earth as a whole?

**Unit 4: Earth Models and Theories**

* How have models of inside Earth changed over time?
* How does the nature of science allow for ideas and theories to change?

**Unit 5: Geologic Time**

* How have human’s been able to determine the age of the Earth?
* How have scientists classified the sections of Earth’s history?

**Unit 6: Fossil Dating investigation**

* How can the age of an unknown fossil be accurately predicted?

**Unit 7: Plate Tectonics**

* How did the theory of plate tectonics come about?
* How can the events and structures on Earth’s surface be explained by the layers and properties below?

**SECOND SEMESTER**

**Unit 8: The Nature of Light.**

* What is the anatomy of a wave?
* What are the characteristics that make up light?
* How does the nature of light allow us to perceive color?

**Unit 9: Spectroscopy Investigation**

* How can the characteristics of light waves be used to predict the chemicals on distant stars and planets?

**Unit 10: Earth Cycles**

* Why does Earth experience seasonal changes?
* Why do we perceive the moon as going through phases?

**Unit 12: Origin of Stars and their Solar Systems**

* How did our solar system form?
* What causes stars to go through different life stages?

**Unit 12: H-R Diagram Investigation**

* How can the characteristics of stars at different life stages be plotted and mapped in a meaningful way?

**Unit 13: Galaxies and the Universe**

* What are galaxies?
* How is the Universe mapped?
* What is the structure of the Universe?

**Unit 14: Energy Flow**

* How does Energy flow through an Ecosystem?
* How much energy is transferred up the food chain?

**Unit 15: Population Dynamics of Multiple Species Investigation**

* What causes a population to grow or shrink?
* How do populations of different species influence each other?

**Unit 16: Adaptations and Niches**

* How do organisms obtain and use resources?

**Unit 1y: Forkbird Investigation**

* How do adaptations spread throughout or get eliminated from a population over time?

**Your Role:**

Continue to develop your masterful scientist habits of mind:

* + Ask questions and be curious. Investigate.
  + Collect evidence and analyze it.
  + Evaluate and verify information, answers and ideas.
  + Listen with an open mind. Be skeptical but open to change.
  + Be as honest and unbiased as possible. Deal with facts, not opinion.
  + Recognize that science doesn’t provide all the answers and is ambiguous.
  + Collaborate and be a strong team member.

**Learning goals:** I will provide you with specific **learning goals** on the first day of each unit. We will focus our reading, discussions and activities on those objectives. Study the **learning goals** and **Essential Questions** for all assessments!

**Investigations (Activities & Labs)**: You will complete several investigations (activities and labs) each quarter. I will provide very detailed instructions for each of these assignments.

**Absences**: If you miss a lesson, consult my website to see what you missed and then download any handouts we used in the lesson. Please ask for help if you need it but only after you’ve checked the website carefully.

**Literacy Skills:** Reading, writing and speaking skills are vitally important for your future success as a student and beyond. Therefore, I will emphasize these skills throughout the course. You may have a brain full of great ideas, but you need to be able to clearly communicate these great ideas to other people. When this school year ends, you will be a better communicator … not just in science!

**Technology Skills**: We will use technology where appropriate to further our understanding of historical events, develop research skills, collaborate with fellow students, and enhance the overall learning experience.

**Deep Learning Proficiencies and 21st Century Skills:** We will make every effort to incorporate a range of processes and skills (critical thinking and problem solving, communication., collaboration, creativity and innovation, citizenship and systems thinking) that are vital to your success in education and the job market.

**Grading**: Each reporting period will include a mix of quizzes, investigations (labs), and performance based assessments. **All** **assessments** are based on **unit learning goals**, which are covered in detail and applied throughout the course. In addition, I will make every effort to provide rapid feedback on all assigned work. I am available before school, at lunch, and after school each day for additional assistance. Also, remember academic assistance is available on late start Wednesday’s.

**CONTENT grades include:**

* Summative Assessments (tests & quizzes)
* Formative Assessments (classwork, quizzes)
* Labs & Presentations (performance tasks)
* Conclusions using Claim, Evidence, and Reasoning (C.E.R.)
* Deep Learning Proficiencies

**Personal & Social Responsibility (PSR) grades included in overall score:**

* Participation & Teamwork
* Practice Assignments
* Homework
* Write to Think
* Organization & Preparedness

LATE WORK

* Students should come to class ready to, either turn in their homework, or go over their homework on the day it is due. If a student needs more time to complete an assignment, please see me *before* it is late! Late homework receives a PSR score of “1” unless otherwise arranged with me or unforeseeable circumstances prevent completion. Remember, homework is an opportunity for you to practice your skills and knowledge, make mistakes, and learn on your own. Late work will be accepted until the end of the unit.

**Personal and Social Responsibility Scoring Rubric**

4 = Student goes above and beyond what is required or taught in the classroom (for example: applying learning to the real world and/or demonstrating beyond grade level proficiency by completing optional assignments/projects)

3 = All work is neat, complete and largely correct. Student demonstrates effective effort and participation.

2 = Some effective effort demonstrated. Work or participation may be inconsistent or incomplete.

1 = Minimal effort or participation is demonstrated.

**General Learning Rubric**

4 = In addition to level 3, in-depth inferences and applications (real world!) that go *beyond* what was explicitly taught or demonstrated.

3 = Student consistently demonstrates all aspects of the CFSD Benchmark and shows mastery of the learning taught in class. Minor errors or omissions may exist.

2 = Student exhibits understanding of the basic, simpler details/processes of the topic. There are major errors or omissions regarding the more complex processes.

1 = With help, only a partial understanding of the simpler details/processes; many of the more complex ideas/processes are not demonstrated.

**Other StudentVUE Codes**

N = No Evidence of Understanding/Missing

X = Excused

R= Received, pending grade

**Redo’s/Retakes –** Our goal at Orange Grove is to have all students achieve mastery at a level 3 or higher for all assessments.  If a student does not achieve mastery at the desired level, they have the option to redo/retake the assessment and a variety of methods may be used to determine their mastery of a concept but will reflect the original standard of the assignment. Students may be required to pursue opportunities such as attending academic assistance, meeting with me during lunch, or submitting missing assignments, in order to ensure they strengthen areas of weakness before they retake assessments.

It is up to the student to schedule make-up times and to ask for help from the teacher.  Makeup and late assignments must be completed and turned in no later than one week after the end the unit the assignment was originally given.

***We are all Life Long Learners.***

***I’m looking forward to a great year of scientific discovery together!***