

Omaha North High Magnet STEM School
Physical Science
Course Syllabus

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| Instructor: | Ms. Andrea Laudi |
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| Office Phone Number: | 531-299-7240 |
| Plan Periods: | 3 rd and 8 th period |
| Link to Weekly Agenda: | Laudi PS Weekly Overview LINK |
| Office/Classroom | Room 347 |
| Best times to contact: | 1:30 pm – 3:00 pm, Mon-Fri |

Course Description

Physical Science engages students in the three dimensions (science practices, disciplinary core ideas, and crosscutting concepts) of learning as identified by the Nebraska College and Career Ready Standards for Science. The topics include: structure & properties of matter, chemical reactions, space systems, energy, weather & climate, forces & interactions, Earth's systems, and waves & electromagnetic radiation. This course meets the district requirement for Physical Science.

Instructional Philosophy

With the successful completion of a science course, students should be expected to look at the world around them making logical connections to science concepts. Differentiation and inquiry are strong components used to engage the student in learning scientific concepts. Each student deserves to learn, and an effort should be made to connect with each student to drive that learning. The use of kinesthetic, visual, and auditory-based lessons encourages students to be successful, using their personal learning style. Engaging the students in activities and labs will build inquiry skills needed to be taken out into the student's daily environment. Questioning possibilities, problem solving, and critical thinking skills can increase with the use of inquiry and builds well rounded citizens.

Nebraska College and Career Ready Standards

- SC.HS.1.1 Gather, analyze, and communicate evidence of forces and interactions.
- SC.HS.2.2 Gather, analyze, and communicate evidence of the interactions of waves.
- SC.HS.3.3 Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter.
- SC.HS.4.4 Gather, analyze, and communicate evidence of the interactions of energy.
- SC.HS.5.5 Gather, analyze, and communicate evidence of chemical reactions.
- SC.HS.11.1 Gather, analyze, and communicate evidence to defend that the universe changes over time.
- SC.HS.12.2 Gather, analyze, and communicate evidence to support that Earth's climate and weather are influenced by energy flow through Earth systems.
- SC.HS.13.3 Gather, analyze, and communicate evidence to defend the position that Earth's systems are interconnected and impact one another.

English/Language Arts Standards Connections

- RST.9-10.7** Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- RST.9-10.8** Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
- RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- RST.11-12.2** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- RST.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- RST.11-12.9** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
- WHST.9-12.5** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research.

WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and over reliance on any one source and following a standard format for citation.

SL.11-12.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

Mathematics Standards Connections:

MP.2 Reason abstractly and quantitatively. (Mathematical Process 1)

MP.4 Model with mathematics. (Mathematical Process 2)

HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. (MA.8.2.1a, MA.8.2.2)

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (MA.11.2.2.h)

HSA-CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. (MA.11.2.2.f)

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context. (MA.11.2.3)

HSA-SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. (MA.11.2.2.f)

HSF-IF.C.7 Graph functions expressed symbolically and show key features of the graph, by in hand in simple cases and using technology for more complicated cases. (MA.11.2.1.e, MA.11.2.1.f, MA.11.2.1.g, MA.11.2.1.h)

HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. (MA.11.2, MA.11.4.2)

HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling. (MA.11.2.3)

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. (MA.11.1.2.d)

HSS-ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots). (MA.6.4.1.a)

Major Units of Study

Unit 1: Universal Forces

Unit 2: Space Chem

Unit 3: Earth's Physics

Unit 4: Earth's Energy Systems

Course Expectations

- Complete coursework, both in and out of class, in a timely fashion.
- Participate during in-class discussion and cooperative learning opportunities.
- Complete formal lab write-ups.
- Create technology-based projects and presentations.

Class Rules and Expectations

Be Safe, Be Respectful, Be Responsible

- Rules and guidelines set forth in the student handbook will be followed in this class. Any student who distracts other students or the instructor interferes with the learning environment and should expect consequences.
- Attendance: Being in class, on time, is important for student success. Anyone entering the classroom after the bell has stopped ringing is tardy. Per school policy...
- Electronic Devices: No electronic devices (cell phones, mp3 players, games, etc.) are permitted to be seen, heard, or used in the classroom at any time, per school policy...

Safety Expectations

Physical Science is a lab-based course with safety as an essential component. The safety guidelines support and encourage an investigative approach and laboratory instruction, while at the same time assisting in the development of a safe learning environment. Students will follow the Omaha Public Schools district guidelines on safety, which are

published in the science safety contract. Students will be provided a copy of the guidelines. The students, parents and/or guardians are expected to read the guidelines and sign and return the signature portion of the contract. The student will not be allowed to participate in the lab activities until the signed contract is returned.

Texts

- Pearson *Physical Science: Concepts in Action* (2011)

Assessment (customized according to subject area – examples below)

- Course grades will be determined by planned assessments such as tests, quizzes, and projects scored with rubrics.
- Major tests and/or writing projects are to be expected at the end of each major unit outlined above.
- State Testing: To address state requirements, all 11th grade students will complete the ACT.
- District Testing: The NWEA/MAP test will be administered as a predictive test. The NWEA/MAP test will be administered in high school only to 9th and 10th grade students

OPS Secondary Grading Practices*

All coursework and assessments are judged based on the level of student learning from “below basic” to “advanced.” This course will provide multiple opportunities to achieve at the “proficient” to “advanced” levels. Students are evaluated based on a proficiency scale or project rubric. Proficiency scales for this course are available upon request (teacher will identify location such as portal, teacher website, attached, etc.)

Weighting Assignments (Using A Multiplier)*

When entering grades in the grade book, teachers may assign greater weight to some assignments than others. For example, the final exam may impact a student’s summative grade more than a unit test. Teachers will have the option to use the multiplier to weigh both formative and summative assessments to a maximum of 4. Lab reports and quizzes will receive a weight of 2 due to these assignments being more time intensive. If a weight of 2 or more is applied to an assessment, this information will be communicated to students at the time the assessment is announced.

There are three types of coursework*

- ***Practice*** – assignments are brief and done at the beginning of learning to gain initial content (e.g., student responses on whiteboards, a valid sampling of math problems, keyboarding exercises, and diagramming sentences, checking and recording resting heart rate). Practice assignments are not generally graded for accuracy (descriptive feedback will be provided in class) and are not a part of the grade. Teachers may keep track of practice work to check for completion and students could also track their practice work. Practice work is at the student’s instructional level and may only include Basic (2) level questions.
- ***Formative (35% of the final grade)*** – assessments/assignments occur during learning to inform and improve instruction. They are minor assignments (e.g., a three-paragraph essay, written responses to guiding questions over an assigned reading, completion of a comparison contrast matrix). Formative assignments are graded for accuracy and descriptive feedback is provided. Formative work may be at the student’s instructional level or at the level of the content standard. Formative assessments/assignments will have all levels of learning – Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment, students will be able to earn an Advanced (4). Teachers will require students to redo work that is not of high quality to ensure rigor and high expectations. The students’ score on a formative assessment that was redone will be their final score. It is recommended to have three to five formative assessments for every one summative assessment.
- ***Summative (65% of the final grade)*** – assessments/assignments are major end of learning unit tests or projects used to determine mastery of content or skill (e.g., a research paper, an oral report with a power point, major unit test, and science fair project). Summative assignments are graded for accuracy. Summative assignments assess the student’s progress on grade level standards and may not be written at the student’s instructional level. Summative assessments/assignments will have all levels of learning – Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment students, will be able to earn an advanced (4).

To maintain alignment of coursework to content standards, which is a key best practice for standards-based grading, teachers will utilize a standardized naming convention for each of the standards within a course. The content standard will be marked on each assignment entered into Infinite Campus (District Grading Program) using all capital letters followed by a colon. After the colon will be the title of the coursework.

At the end of the grading period, scores are converted to a letter grade using this grading scale.

A = 3.26 – 4.00

B = 2.51 – 3.25

C = 1.76 – 2.50

D = 1.01 - 1.75

F = 0.00 – 1.00

Redoing/Revising Student Coursework*

1. Students are responsible for completing all coursework and assessments as assigned.
2. Students may be allowed redos and revisions of coursework for full credit during that unit of study based upon the teacher's professional judgment and evidence collected throughout the unit. Scores for student work after retaking, revising or redoing will not be averaged with the first attempt at coursework or assessment but will replace the original student score.
3. Students are expected to complete assessments when given to the class, or if a student was justifiably absent, at a time designated by the teacher.
4. Redoing, retaking or revising will be done at teacher discretion in consultation with the student and parent(s). Teachers may schedule students before, during, or after school to address needed areas of improvement if not convenient during class. The time and location for redoing, retaking or revising will be done at the teacher's discretion in consultation with the student and parent(s).
5. Labs can be made up if classed is missed. It is the responsibility of the student to contact the teacher so that an alternative plan can be established. At the teacher's discretion, a different assignment may replace the lab, whereby the same learning targets are achieved.
6. Exams cannot be retaken. Students will be allowed to use **hand-written** notes only on their assessments.
7. Quizzes can be retaken one time. Students are responsible for emailing Ms. Laudi to schedule a retake time. The retake must occur within **4 business days** (non-weekends, non-holidays) of the original quiz. The use of **hand-written** notes is also permitted during quizzes.

Late Coursework*

Students are expected to complete coursework on time. Late coursework may be accepted for full credit until the end of the unit based on the teacher's professional judgment and evidence collected throughout the unit. Accepted late work will not result in a reduction in grade and the M (Missing) will be replaced with the score earned by the student. The teacher or school may make exceptions depending upon student circumstances (such as prolonged absences due to illness). Late work turned in must be accompanied by an **email** to Ms. Laudi stating where the assignment was turned in as well as a **3-5 sentence explanation** of what prevented the student from not previously turning the assignment in on time.

Missing Coursework*

Work not turned in at all will be recorded in Infinite Campus (district grade book) as an M for missing, which calculates to a score of zero.

Independent Practice*

The role of independent practice is to develop knowledge and skills effectively and efficiently during the unit of study. Independent practice helps guide the learning process by providing accurate, timely and helpful feedback to students without penalty.

| Week | Unit Topics | Planned Activities |
|---------------|--|---|
| Weeks 1 – 12 | SC.HS.1 Forces and Interactions SC.HS.4 Energy SC.HS.11 Space Systems | Bundle/Instructional Sequence 1 Bundle/Instructional Sequence 2 |
| Weeks 13 – 18 | SC.HS.3 Structure and Properties of Matter SC.HS.4 Energy SC.HS.5 Chemical Reactions SC.HS.11 Space Systems | Bundle/Instructional Sequence 1 Bundle/Instructional Sequence 2 Bundle/Instructional Sequence 3 |

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| Weeks 19 – 26 | SC.HS.1 Forces and Interactions SC.HS.2 Waves & Electromagnetic Radiation SC.HS.4 Energy SC.HS.13 Earth's Systems | Bundle/Instructional Sequence 1 Bundle/Instructional Sequence 2 |
| Weeks 27 – 36 | SC.HS.3 Structure and Properties of Matter SC.HS.4 Energy SC.HS.5 Chemical Reactions SC.HS.12 Weather & Climate | Bundle/Instructional Sequence 1 Bundle/Instructional Sequence 2 Bundle/Instructional Sequence 3 |

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