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Course Description
Physical Science is an inquiry-based course designed to expose students to selected concepts in chemistry, physics, earth, and space science. Topics include matter, energy, forces and motion, Earth in space, and Earth structures and processes. This course provides a foundation for other science courses.

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.

Content and Inquiry Standards
SC12.1.1.a-l Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models.
SC12.1.2.a-d Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations.
SC12.1.3.a-h Students will solve a complex design problem.
SC12.2.1.a-h Students will investigate and describe matter in terms of its structure, composition and conservation.
SC12.2.2.a-g Students will investigate and describe the nature of field forces and their interactions with matter.
SC12.2.3.a-k Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.
SC12.4.1.a-c Students will investigate and describe the known universe.
SC12.4.2.b Students will investigate the relationships among Earth’s structure, systems, and processes.
SC12.4.3.a-c Students will investigate and describe the relationships among the sources of energy and their effects on Earth’s systems.

Literacy Standards
RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept, provide an accurate summary of the text. (SC12.1.1.f, SC12.1.1.j, SC12.1.1.k)
RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. (SC12.1.1.b, SC12.1.1.d, SC12.1.1.e, SC12.1.1.i)
RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. (Supports all content standards)
RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms. (Supports all content standards)
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. (SC12.1.1.f, SC12.1.1.g, SC12.1.1.j)
RST.9-10.9 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. (SC12.1.1.g, SC12.1.1.i, SC12.1.1.k, SC12.1.2.d)

WHST.9-10.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes

a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinction; (NOTE: Last phrase of writing standard intentionally deleted) (SC12.1.1.c, SC12.1.1.j)

b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic. (SC12.1.1.a, SC12.1.1.b, SC12.1.1.h, SC12.1.1.j)

c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. (SC12.1.1.j)

d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. (SC12.1.1.j)

e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. (SC12.1.1.f, SC12.1.1.j)

f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). (SC12.1.1.g, SC12.1.1.h, SC12.1.1.j)

WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; and integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. (SC12.1.2.d)

WHST.9-10.9 Draw evidence from informational texts to support analysis, reflection, and research. (SC12.1.1.g)

SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts and issues, building on others’ ideas and expressing their own clearly and persuasively.

b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. (SC12.1.1.k)

SL.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source. (SC12.1.1.k)

SL.9-10.5 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. (SC12.1.1.j)

SL.9-10.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (SC12.1.1.j)

Grading Standards/Weights
Formative 35%
Summative 65%

Major Units of Study
Semester 1

- 12 weeks on Matter and Energy
  - Policies, procedures, and safety
  - Inquiry and scientific method
  - States and energy transfer of matter
  - Placement and variation of subatomic particles
  - Periodic table
  - Bonding and chemical reactions
  - Rate of reactions
  - Endothermic and exothermic reactions

- 6 weeks on Force and Motion
  - Velocity
  - Newton’s 1st Law

Semester 2

- 9 weeks on Energy
  - Energy Transfer
  - Parts of waves
  - Electromagnetic spectrum
  - Temperature and heat (conduction, convection, and radiation)

- 9 weeks on Earth and Space Systems
  - Plate Tectonics
- Internal and External heat sources
- Conduction, convection, and radiation in Earth’s heat transfer
- Renewable and nonrenewable energy
- Big Bang Theory
- Solar System
- Life cycle of a star

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.

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

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.)

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 white boards, 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). The students score on a formative assessment that was redone will be their final score.

- **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 summative 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.

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\begin{align*}
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
\end{align*}
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**Redoing/Revising Student Coursework**

1. Students are responsible for completing all coursework and assessments as assigned.
2. Students will be allowed redos and revisions of coursework for full credit as long as they are turned in during that unit of study while a student still has an opportunity to benefit from the learning. When time permits, teachers should allow the redoing or revising of summative assessments.
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. Scores for student work after retaking, revising or redoing will not be averaged with the first attempt at coursework but will replace the original score.

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