

08: Oscillation and Waves

Content Area: **Science**
Course(s): **Honors Physics**
Time Period: **April**
Length: **1**
Status: **Published**

Enduring Understandings:

- Amplitude determines brightness and loudness
- Frequency determines pitch and color
- Intensity of waves diminishes with distance in a squared relationship.
- Light is a transverse electromagnetic wave.
- Moving sources of waves create new wave patterns that can be heard or seen.
- Sound is a longitudinal pressure wave.
- The motion of pendulums and springs can be modeled using equations for sine curves
- Waves are a transfer of energy not a transfer of matter.

Essential Questions:

- How are what we see for light and hear for sound related to the waves that make them up?
- How is wave motion different from the motion of everyday matter?

Lesson Titles:

- Intensity of Waves
- Introduction to Waves
- Moving Sources of Waves
- Pendulums and Oscillations
- Properties of Sound and Light
- Speed of Waves
- Springs and Oscillations

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections:

LA.RH.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, qualitatively, as well as in words) in order to address a question or solve a problem.
LA.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.
LA.RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
LA.WHST.11-12.1.A	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
LA.WHST.11-12.1.B	Develop claim(s) and counterclaims using sound reasoning and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
LA.WHST.11-12.1.C	Use transitions (e.g., words, phrases, clauses) to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
LA.WHST.11-12.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- Chromebook Activity
- Independent Studies
- Lectures on Pendulums and Oscillations, Springs and Oscillations, Introduction to Waves, Speed of Waves, Properties of Sound and Light, Moving Sources of Waves, and Intensity of Waves
- Problem Solving
- Science Labs on Pendulums and Oscillations, Springs and Oscillations, Introduction to Waves, Speed of Waves, Properties of Sound and Light, Moving Sources of Waves, and Intensity of Waves

Modifications

Formative Assessment:

- Anticipatory Set
- Closure
- Quizzes on Pendulums and Oscillations, Springs and Oscillations, Introduction to Waves, Speed of Waves, Properties of Sound and Light, Moving Sources of Waves, and Intensity of Waves
- Warm-Up

Summative Assessment:

- Alternate Assessment
- Benchmark
- Marking Period Assessment
- Unit Test on Oscillation and Waves

Alternative Assessments:

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Benchmark Assessments:

Skills-based assessment

Reading response

Writing prompt

Lab practical

Resources & Materials:

- <https://sites.google.com/site/delseaphysics1/Home>