To view this meeting, the livestream link is: https://vimeo.com/event/729428

To make a public comment, the call in number is (US) 1-716-508-7312

The PIN is 334 300 467#

Board of Education — Council Chambers
March 7, 2023 — 7:00 p.m.

As citizens of our community, we will conduct ourselves in accordance with Newtown's Core Character Attributes as displayed in our character tree. We will be responsible for our actions and show respect for each other. We will interact peacefully, productively, and politely. We will be trustworthy and honest and show compassion toward others. Newtown's continued success is contingent upon our ability to persevere, to follow through with our commitments, and to stay focused on the greater good.

A G E N D A

Item 1 PLEDGE OF ALLEGIANCE

Item 2 CONSENT AGENDA
- Donation to Newtown High School
- Correspondence Report

Item 3 **PUBLIC PARTICIPATION

Item 4 REPORTS
- Chair Report
- Superintendent's Report
- Committee Reports
- Student Representative Reports

Item 5 PRESENTATIONS
- First Read of Myth and the Modern World Curriculum
- K-5 Math Update

Item 6 OLD BUSINESS
- Second Read and Action on Honors Physics Curriculum
- Strategic Plan Update

Item 7 NEW BUSINESS
- Discussion and Possible Action on 2023-2024 School Calendar
- First Read of Policies
  - 4134 Tutoring
  - 4-104 Professional Development (to be rescinded)
  - 4-105 Continuing Education Units (to be rescinded)
  - 4-602 Soliciting and Selling (to be rescinded)
  - 4-603 Tutoring Students (to be rescinded)
- Action on Minutes of February 22, 2023 Special Meeting
- Action on Minutes of February 22, 2023

Item 8 **PUBLIC PARTICIPATION

Item 9 ADJOURNMENT

***The Board encourages the public to share thoughts and concerns at two points during Regular Meetings. During the first Public Participation, the Board welcomes commentary regarding items on the agenda. During the second Public Participation, commentary may also include issues for the Board to consider in the future. After being recognized, please state your name and address for the record. We request that speakers be respectful and limit comments to three minutes. The Board of Education does not discuss personnel items or student matters in public nor does it engage in dialogue during either public comment period. If you desire more information or responses to specific questions, please email the Board.*

February 27, 2023

TO: Chris Melillo

FROM: Kim Longobucco

Please accept the donation of $7,500 from Ingersoll Auto of Danbury. This is a very generous gift to the Newtown High School Drama program. Newtown High School students will certainly benefit from this donation.

Thank you.

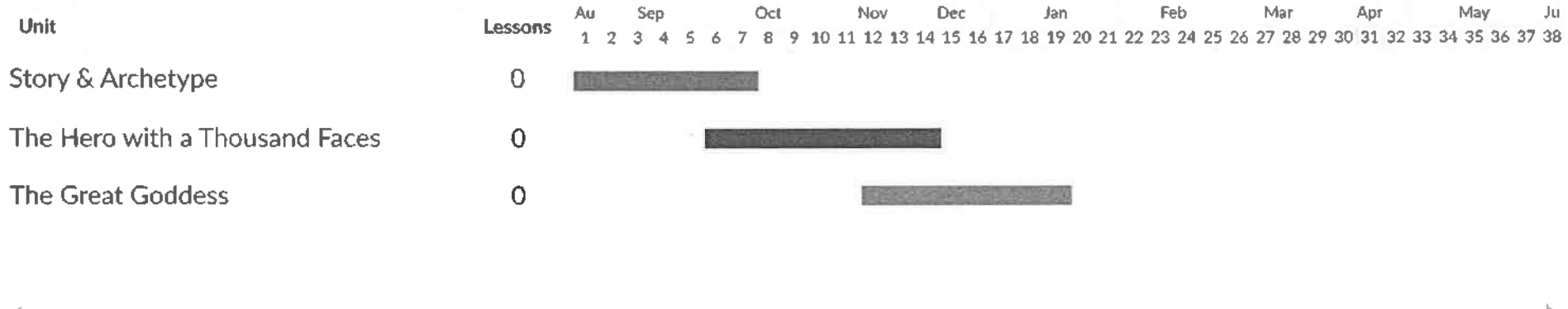
Newtown Public Schools

Atlas

Myth and the Modern World (Under Revision)

3 Curriculum Developers | Last Updated: Wednesday, Dec 14, 2022 by Marks, Abigail

Unit Calendar by Year



3 Units found

Previous Year

Unit Planner: Story & Archetype
Myth and the Modern World

Friday, February 10, 2023 10:47 AM

Newtown High School / 2022-2023 / Grade 12 / English Language Arts / Myth and the Modern World (Under Revision) / Week 1 - Week 7

Last Updated: Wednesday, December 14, 2022 by Abigail Marks

Story & Archetype

Marks, Abigail; Rovello, James; Toby, Michelle

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Patterns and Meaning

Culture, Community, Individual, Cosmological Function, Sociological Function, Metaphysical Function, Psychology Function, Myth as Metaphor, Fear, Anxiety, Coping Mechanisms, Archetypes, Archetypal Patterns, Storytelling, Myth, Self-Evaluation, Philosophy, Quest for Meaning

G

Generalizations / Enduring Understandings

1. Myths both reflect and shape culture, communities, and individuals through their four functions: cosmological, psychological, metaphysical, and sociological.

2. Myths offer a means for alleviating anxiety, coping with and facing fears, and countering the meaninglessness associated with failure and depression.

3. Myths vitalize an individual's understanding of personal philosophy and one's place in the universe.

4. Stories reveal timeless, universal archetypal patterns.

5. Storytelling empowers individuals to better understand themselves.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1a. What are Joseph Campbell's Four Functions of Myth? (factual)

1b. Who is Carl Jung? (factual)

1c. How do myths shape and reflect culture? (conceptual)

1d. How do myths both shape and reflect the human condition? (conceptual)

1e. Are some myths "better" than others? Why or why not? (provocative)

- planting the seeds for critical lens in the Great Goddess Unit.

2a. Why did early cultures create myths? (factual)

2b. Why do people fear the unknown? (conceptual)

2c. What are modern fears and anxieties? (conceptual)

2d. How does analysis and interpretation of myth address modern fears and anxieties? (conceptual)

3a. What is a metaphor? (factual)

3b. During times of conflict or crisis, how do myths help individuals (and cultures) understand themselves? (conceptual)
3c. How can people create meaning and a deeper understanding of their lives through the power of myth? (conceptual)

3d. Is myth relevant to modern society? (i.e., Why study myth?) (provocative)

4a. What is an archetype? (factual)

4b. How do writers, artists, and filmmakers use archetypes to convey meaning and achieve purpose? (conceptual)
4c. How does myth speak to life experiences? (conceptual)

4d. Do personal stories matter? (provocative)

5a. For a given audience, what narrative techniques enhance stories? (factual)

5b. How does one tell a story to best understand one's self and reflect values? (conceptual)

5c. What makes an effective college essay? (conceptual)

5d. Can a college essay be on any topic? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: English Language Arts 6-12

CCSS: Grades 11-12

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

They build strong content knowledge.

They respond to the varying demands of audience, task, purpose, and discipline.

They come to understand other perspectives and cultures.

Reading: Literature

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

RL.11-12.2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

RL.11-12.3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

RL.11-12.5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

W.11-12.1a. 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 claim(s), counterclaims, reasons, and evidence.

W.11-12.1c. Use words, phrases, and clauses as well as varied syntax 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.

W.11-12.1d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

W.11-12.1e. Provide a concluding statement or section that follows from and supports the argument presented.

2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.11-12.2a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

W.11-12.2b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions,

concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

W.11-12.2c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

W.11-12.2d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.

W.11-12.2e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

W.11-12.2f. 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).

3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

W.11-12.3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

W.11-12.3a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.

W.11-12.3b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.

W.11-12.3c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).

W.11-12.3d Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.

W.11-12.3e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

W.11-12.5. 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.

Speaking & Listening
Comprehension and Collaboration
1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.11-12.1b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

SL.11-12.1c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

SL.11-12.1d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all

sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

Language

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L.11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L.11-12.1a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.

L.11-12.1b. Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2a. Observe hyphenation conventions.

L.11-12.2b. Spell correctly.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

L.11-12.3a. Vary syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Concepts

What is Myth?

Who is Joseph Campbell?

Who is Carl Jung?

Wat are the Four Functions of Myth (1. cosmological, 2.sociological, 3. pedagogical/psychological, 4.mystical/metaphysical)

What are Archetypes?

Character Archetypes:

- The Mother Figure
- Wise Old Man / Mentor
- Trickster

- The Hero - *the Hero is a protagonist whose life is a series of well-marked adventures. Often he will have to leave his kingdom, only to return to it upon reaching manhood.*
- The Damsel in Distress / Maiden
- The Child - *innocence, salvation, rebirth*
- The Shadow - *amoral (not evil), animalistic side of self, think the Hulk*
- Persona - *masks people wear, how they want to be perceived by others, and sometimes wearing the "mask" falsely convinces the wearer that's who they are.*

Situational Archetypes

- Father & Son Conflict
- The Fall or Descent - the descent from a higher to a lower state of being. It is also the loss of innocence.
- The Cave (as a form of descent) - *venturing into the unconscious, some unresolved issue or problem that the character must confront or succumb to.*
- The Shackles (as a form of descent)
- The Labyrinth (as a form of descent)
- Journey or Quest - *metaphorically a search for self*
- The Unhealable Wound - *Either a physical or psychological wound that cannot be full healed. The sound symbolizes a loss of innocence, a thing you can never really ever process or resolve.*

Analyze and interpret symbols and metaphors (ex: approaching myth as metaphor, like Bao Chu's coat in "The Quest for the Sun")

Identify and apply archetypes to contemporary literature, film, and art.

Craft and revise the College Essay

Skills

Reading and Writing with a purpose

Summarizing

Analyzing

Close Reading

Synthesis

Interpretation

Core Learning Activities

Campbell's Four Functions of Myth Presentation, Seminars and Application

- Storyboarding
- Discussion
- Family Tree of the Greek Gods (Greek creation story in Rosenburg version) or Norse Gods (Neil Gaiman's *Norse Mythology*).

"Creation Myth" Presentations and Class Discussion (see attached)

Applying the Four Functions through the Twilight Zone episode, "Old Man in the Cave" (Ep. 127) and/or "The Hitchhiker" (Ep. 16) (DVDs in English Department and/or available on Netflix as of July 2019).

Anonymous list of student-generated fears or concerns, which we share with the class. Use to highlight how myths help individuals cope with fears and anxieties.

"The Quest for the Sun" (Rosenburg version) and/or Psyche and Cupid (Edith Hamilton version) to introduce the Archetypes and thinking about myth metaphorically.

Class-wide Text-Based seminar on myths and relating them to our lives. Followed by small group seminars where students read myths in groups and then share how myths connect to their lives to the whole class (unusually a universal document all students can edit).

"I Am Myth" Summative Assessment

Fall Semester College Essay

Psyche and Cupid Seminar pdf
Class Myth Selection.pdf
Small Group Myth Selection
I Am Myth Seminar (Inuit, Yoruba, and Greek)
Sample Universal Document for Small Group Seminars
Situational Archetypes (Teacher Notes)
Presentation on Jung & Archetypes

Myth as Metaphor (Quest for the Sun)

Assessments

I Am Myth Project
Summative: Expository Essay
Once we've completed the seminars, write a 600-1000 word reflection, exploring the metaphorical images within the myth and what they mean to you. **How does the myth speak to what's inside you?**
I am Myth Project (Honors) 2014.doc
I Am Myth (Summative).pdf
I Am Myth Seminar (Inuit, Yoruba, and Greek).pdf
Summative: College Essay
Summative: Narrative Writing Assignment
College Essay Assignment 2018.docx
College Essay Checklist Rubric 2018.docx
Applying Archetypes to Chinese (or Alternative) Myth Written Test
(Demeter & Persephone) Applying Archetypes Assessment.pdf
(Simple) Applying Archetypes to Quest for the Sun.pdf
Summative: Applying Four Functions Written Test
Students will apply the Four Functions to the Myth.

Here are some optional assessments to try, which can be modified for different myths or stories.
Creation Story Applying Four Functions 2017 (Ages of Man).docx
Applying Joseph Campbell to TZ (More direct questions) - 2013.doc

Resources

Professional & Student

- *Mythology*, Edith Hamilton
- *World Mythology*, Donna Rosenberg
- *Norse Mythology*, Neil Gaiman
- *Archetypes in Life, Literature, and Myth*, Shelly Ni Tuama, Lessons 1-3
- *The Twilight Zone* episode 127, "Old Man in the Cave"
- *The Twilight Zone* episode 16, "The Hitchhiker" (DVDs in English Department and/or available on Netflix as of July 2019).

- College Essay Checklist Rubric
- College Essay Presentation

College Essay 2021

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Guidance Seminar

AP Psych (Jung)

Astronomy

Unit Planner: The Hero with a Thousand Faces
Myth and the Modern World

Friday, February 10, 2023, 10:45AM

Newtown High School / 2022-2023 / Grade 12 / English Language Arts / Myth and the Modern World (Under Revision) / Week 6 - Week 14

Last Updated: Wednesday, December 14, 2022 by Abigail Marks

The Hero with a Thousand Faces

Marks, Abigail; Rovello, James; Toby, Michelle

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Systems and Agency

Archetypes, Story, Personal Unconscious, Collective Unconscious, Individuation, Cultural Diversity, Values, The System, Rites of Passage, Patterns, Hero Cycle/ Monomyth, Agency, Empowerment, Self-Reflection, Evaluation

G

Generalizations / Enduring Understandings

1. Hero stories, as evidenced by archetypes, reflect timeless and universal patterns.

2. In every hero myth, the hero metaphorically confronts the personal and collective unconscious, a process Carl Jung called "individuation."

3. The hero's struggle and rites of passage empowers people to discover more meaningful ways to shape their story and live their own lives.

4. Hero stories reflect diverse values of cultures and societies.

5. Heroes resist a dehumanizing system that robs the hero of the vitality of life and individual agency.

6. Re-evaluation and self-reflection empowers individuals to become the central character in their own

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1a. Regardless of culture, what common elements do all hero stories share? (factual)

1c. What is Joseph Campbell's theory of the hero cycle? (factual)

1d. Why is the hero cycle timeless and fundamental? (conceptual)

1e. Why is the hero cycle essential to the human condition or lived experience? (conceptual)

2a. What is the personal and collective unconscious? (factual)

2b. How do dreams, stories, art, and myth reflect the collective unconscious? (conceptual)

2c. Who is Carl Jung? (factual)

2d. What is the process of "individuation", according to Jung? (factual)

life despite the demands of the system (cultural, familial roles and expectations).	2e. How does the process of "individuation" work? (conceptual) 2f. Why does the hero descend into the darkness? (conceptual) 3a. How does the hero cycle operate in one's life? (conceptual) 3b. How can an understanding of the hero cycle empower individuals? (conceptual) 3c. Can an understanding of the hero cycle empower individuals? (provocative) 3d. Is it essential to confront fear and to accept vulnerability? (provocative) 3e. Which is the better hero for society to embrace, the ideal or flawed hero? (provocative) 4a. What are some of the honor codes found in ancient warrior cultures? (factual) 4b. How do hero stories reflect their culture of origin? (conceptual) 4c. Are some values universal and timeless? Or are all values culturally determined? (provocative) 4d. How do values and ideals influence (or hinder) the reading of stories that reflect alternative values and ideals? (provocative) -Plants seeds for Unit III 5a. What is Joseph Campbell's concept of "the system"? (factual) 5b. Where and how does "the system" operate in hero stories and the hero cycle? (conceptual) 5c. How does the hero learn to break free of "the system" or find a way to live peacefully within it?

	(conceptual) 6a. Where and how does one see systems in one's life? (conceptual) 6b. How can people become the authors of their life's story instead of prisoners to a programmed life (i.e., the system)? (conceptual) 6c. Is it possible to find one's place within a system while resisting its dehumanizing demands? (provocative) 6d. Is resistance an essential aspect of freedom? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: English Language Arts 6-12

CCSS: Grades 11-12

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

They come to understand other perspectives and cultures.

Reading: Literature

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RL.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

RL.11-12.2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

RL.11-12.3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

RL.11-12.5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

Range of Reading and Level of Text Complexity
10. Read and comprehend complex literary and informational texts independently and proficiently.

RL.11-12.10. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

Writing

Text Types and Purposes
1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

W.11-12.1a. 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 claim(s), counterclaims, reasons, and evidence.

W.11-12.1b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.

W.11-12.1c. Use words, phrases, and clauses as well as varied syntax 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.

W.11-12.1d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

W.11-12.1e. Provide a concluding statement or section that follows from and supports the argument presented.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

W.11-12.5. 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.

Speaking & Listening

Comprehension and Collaboration
1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.11-12.1b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

SL.11-12.1c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote

divergent and creative perspectives.

SL.11-12.1d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

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.

Language

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L.11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2b. Spell correctly.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Concepts

- Archetypes
- The Hero Cycle (and the universality and endurance of the Hero Cycle)
- The warrior code for either Ancient Greek or Norse culture (ex: the Homeric hero).
    - Hero stories reflect diverse values of individual cultures and societies. (For example, we cannot understand Beowulf without understanding the honor code of loyalty inherent in Norse warrior culture).
- Jung's concepts of the Personal and Collective Unconscious and the process of Individuation
- Joseph Campbell's concept of The System

Identify and apply Individuation to contemporary literature, film, or art.

Identify and apply The System to contemporary literature film, or art.

Personally reflect on and evaluate the impact of a system in your life

Skills

Reading and Writing with a Purpose

Evaluation/Analysis/Synthesizing

Arguing/Persuading

Personalizing and Applying Concepts/Self Evaluating

Optional:

- War, Trauma, and the Hero (e.g., Achilles in Vietnam) - the hero "infected" by the violence he is called upon to use to protect the social order.
- The relevancy of heroism (call to courage) in our own lives (i.e., Is heroism relevant in your own life?)

Core Learning Activities

Presentation on Carl Jung's Individuation and Archetypes

Dream Analysis activities and assignment (to generate new archetypes).

Brainstorm Activity on the hero cycle in contemporary stories (ex: compare plots of Marvel movie, Disney movie, and another adventure to find similar story beats)

Presentation on Joseph Campbell's Hero Cycle

Summative: Study a contemporary film and analyze the depiction of the hero cycle and achievement of individuation (*Take Shelter, A Quiet Place, Kung Fu Panda, Star Wars: A New Hope, Inception, Pan's Labyrinth*). This culminates in an analytical paper.

Note-taking on and viewing of Joseph Campbell's interview with Bill Moyer's "The Hero With a Thousand Faces" (Episode 1 on the DVD the Power of Myth).

- Important notes on The System found in this video.

Black Mirror Episode "Nosedive" as an example of a system.

Read, discuss and analyze a variety of hero myths, including at least one epic hero saga (*The Iliad, Beowulf, The Epic of Gilgamesh*). Can be done at any time during the unit (or use multiple epics).

Summative: Personally reflect on a system in your life.

Presentation- The Personal & Collective Unconscious and Individuation

Dream Analysis (What to do)

Dream Submission Form

Presentation on the Hero Cycle

Brainstorming Hero Stories

Assessments

Summative: Film Paper
Summative: Expository Essay
Select from several film options to explore archetypes and Jung's concept of Individuation.
A Quiet Place, Jung, and Myth.pdf
Take Shelter Paper Topic (Carl Jung & Archetypal Images) .pdf
Inception (Carl Jung & Archetypal Images) (1).pdf
The System & The Dragon Reflection
Formative: Other written assessments
The System & The Dragon In-Class Reflection 2016.docx

Resources

Professional & Student

Teaching Resources:

- Brene Browne "The Call to Courage" on Netflix (especially the segment 109 minutes in).
- *Black Mirror* episode "Nosedive" (Season 3) on Netflix (for teaching The System)
- "How to be Happier," The Week August 17/August 24, 2018 (based on the Yale course on creating a happy life).
- Joseph Campbell's "Hero with a Thousand Faces" Bill Moyers interview (video).
- Visual handouts of the Hero Cycle (available online or in Archetypes in Life, Literature and Myth, Shelley Ni Tuama.
- Course specific myth website compiled by the LMC.

Class Text Options:

- *Achilles in Vietnam*, Jonathan Shay, M.D., PH.D (excerpts)
- *The Iliad*, Homer (excerpts)
- *The Odyssey*, Homer (excerpts)
- *Beowulf*, trans. Seamus Heaney (excerpts).
- *The Epic of Gilgamesh*
- Film adaptations of specific myths:
    - *Hercules* (Disney), dir. Ron Clements and John Musker.
    - *Troy (2004)*, dir. Wolfgang Petersen
    - *Beowulf (2007)*, dir. Robert Zemekis
    - *The Thirteenth Warrior* (1999), dir. Michael Crichton

Film options for summative:

	• o *Take Shelter*, dir. Jeff Nichols o *Inception*, dir. Christopher Nolan o *A Quiet Place*, dir. John Krasinski o *Kung Fu Panda*, dir. John Stevenson & Mark Osbourne o *Star Wars: A New Hope*, dir. George Lucas
Student Learning Expectation & 21st Century Skills Information Literacy Critical Thinking Spoken Communication Written Performance	Interdisciplinary Connections Latin AP Psych (Jungian connections)

Unit Planner: The Great Goddess Myth and the Modern World

Friday, February 10, 2023 10:28AM

Newtown High School / 2022-2023 / Grade 12 / English Language Arts / Myth and the Modern World (Under Revision) / Week 12 - Week 19

Last Updated: Wednesday, December 14, 2022 by Abigail Marks

The Great Goddess

Marks, Abigail; Rovello, James; Toby, Michelle

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Power and Perspective

Dominant Paradigms, Prescriptive Roles, Repression, Eclipsed Voices, Reclamation, Reinvention, Voice, Artists, Perspectives, Critique, Transformation, Life, Death, and Rebirth Cycle, The Great Goddess, The Hero Cycle, Cultural Critique, Inherited/Ancient Stories.

G

Generalizations / Enduring Understandings

1. Ancient stories reflect culturally dominant paradigms.

2. Inherited stories prescribe limited roles.

3. Ancient stories reveal the Life, Death, and Rebirth cycle associated with the Great Goddess, an archetypal pattern that informs and critiques the hero cycle.

4. Ancient tales conceal repressed or eclipsed voices.

5. Contemporary writers and artists reclaim, reinvent and transform ancient stories to offer opposing perspectives and critique.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1a. What is patriarchy? (factual)

1b. What is matriarchy? (factual)

1c. How do stories reveal dominant cultural attitudes? (conceptual)

1d. Where are cultural shifts embedded in myths? (conceptual)

1e. Are symbols, patterns, and metaphors fluid? (conceptual)

2a. How do myths prescribe roles and attitudes? (conceptual)

2b. What do stories say about roles for men and women? (conceptual)

2c. Can myths be read in ways that challenge standard

	interpretations? (provocative) 3a. What are the functions and symbols of the Great Goddess? (factual) 3b. Where is the Great Goddess in hero stories? (conceptual) 3c. How does the Life, Death, Rebirth Cycle reveal the hero in a new way? (conceptual) 4a. What functions and symbols of the Great Goddess are erased or transformed within the myth? (conceptual) 4b. What are the characteristics of the female hero? (factual) 4c. Do female heroes offer deeper and richer understandings of heroism? (provocative) 4d. Does a richer understanding of gender help promote healthy individuation? (provocative) 5a. How do myths offer multiple perspectives and opportunities for empowerment through reinterpretation? (conceptual) 5b. Why do writers, artists, and filmmakers reinvent and adapt old stories for new audiences? (conceptual) 5c. What is risked and/or gained when ancient stories are adapted for modern audiences? (provocative) 5d. Do artists have an obligation to respect the spirit of the original work (even with all of its problematic cultural implications)? (provocative) 5e. Do contemporary audiences draw meaning from ancient hero stories? (For example, *The Iliad* and *Achilles in Vietnam*) (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: English Language Arts 6-12

CCSS: Grades 11-12

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

They build strong content knowledge.

They respond to the varying demands of audience, task, purpose, and discipline.

They comprehend as well as critique.

They value evidence.

They use technology and digital media strategically and capably.

They come to understand other perspectives and cultures.

Reading: Literature

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

RL.11-12.2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

RL.11-12.3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

RL.11-12.5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

6. Assess how point of view or purpose shapes the content and style of a text.

RL.11-12.6. Analyze a case in which grasping a point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

RL.11-12.10. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

Writing

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

W.11-12.5. 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.

6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

W.11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

W.11-12.9. Draw evidence form literary or informational texts to support analysis, reflection, and research.

Range of Writing
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

W.11-12.10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes

Speaking & Listening
Comprehension and Collaboration
1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.1a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.11-12.1b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

SL.11-12.1c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

SL.11-12.1d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

SL.11-12.3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

Presentation of Knowledge and Ideas
4. Present information, findings, and supporting evidence such that listeners can follow the line of

reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

SL.11-12.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks.

5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

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.

6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

SL.11-12.6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

Language

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L.11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L.11-12.1a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.

L.11-12.1b. Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.11-12.2a. Observe hyphenation conventions.

L.11-12.2b. Spell correctly.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

L.11-12.3a. Vary syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

L.11-12.4a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

L.11-12.4d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

5. Demonstrate understanding of word relationships and nuances in word meanings.

L.11-12.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

L.11-12.5a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.

L.11-12.5b. Analyze nuances in the meaning of words with similar denotations.

6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Critical Content & Skills

*What students must **KNOW and be able to DO***

What Students Must be able to Do

- Define Patriarchal and Matriarchal systems.
- Identify and interpret The Great Goddess (functions & symbols, including Life, Death, and Rebirth cycle)
- Interpret how myths of dominant cultures reveal the erasure, repression, and/or demonization of marginalized voices.
    - Ex: Babylonian Creation Story "The Enuma Elish," Pandora's Box (womb as evil instead of creative), and Medusa's backstory.
- Explain how contemporary revisions offer new critical perspectives.
    - Ex: *Achilles in Vietnam* (nonfiction), *Song of Achilles*, *Grendel*, *The World's Wife*, and film adaptations.

Skills

Reading and Writing with a Purpose

Evaluation/Critical Analysis/Synthesizing

Arguing/Persuading

Personalizing and Applying Concepts/Self Evaluating

Images of The Great Goddess (Toby).pptx
The Great Goddess (Rovello).pptx
The Great Goddess Handout 2014.docx
The Great Goddess Notes
The Enuma Elish Exploring the Great Goddess

Core Learning Activities

- Presentation on The Great Goddess (see Google Slides attached).
- Read and Interpret The Babylonian Creation Story "The Enuma Elish" (found in Rosenburg's *World Mythology*).
- **Summative:** Defining the heroine in conjunction with the Great Goddess using *Pan's Labyrinth*, Dir. Guillermo Del Toro (alternatively students can watch *Arrival* (2016), Dir. Denis Villeneuve or Disney's *Moana* (2016), Dir. John Musker and Ron Clements)

- Demeter and Persephone Myth coupled with Leanne O'Sullivan's The Cord Poem
- Carol Ann Duffy's *The World's Wife* - Edith Hamilton's version of Pygmalion coupled with Carol Ann Duffy's Pygmalion's Bride
- **Summative:** Shield as the big assessment for the unit. Ultimately a critique of a previously read Myth (doesn't have to just be a hero story). The Contemporary Re-Telling Project makes for a nice alternative to the Shield, so teachers have options.
- Optional: Watching a contemporary adaptation of an ancient story (ex: *The Iliad* and Wolfgang Petersen's *Troy* (2004))
- Optional: Prior to introducing the Great Goddess, play the Why Myths Change Game - to illustrate how myths evolve to reflect the dominant culture.

Why Do Myths Change Game Myth 2019 (Class 4).docx
Pans Labyrinth In-Class Essay 2019.docx

Assessments

Pan's Labyrinth In-Class Essay
Summative: Expository Essay
Examination of Pan's Labyrinth and the concept of the heroine.

Alternatively, this could be done as a text-based seminar.
Heroes & Pans Labyrinth In-Class Essay 2022.pdf
Shield Project
Summative: Visual Arts Project
Students will take a critical lens to a myth previously read in class and creatively express their interpretation.
(Updated) Shield Visual Rubric.pdf
The Shield Project.pdf
Contemporary Re-Telling Project
Summative: Oral Report
An alternative to the Shield Project.
Students compare a myth, folklore, or legend to a contemporary adaptation and evaluate the changes.
Contemporary Myth Re-Telling Project 2019 (Updated).doc
PPT Animations Tutorial 2019.pptx

Resources

Professional & Student

Class Texts

- *Mythology*, Edith Hamilton
- *The World's Wife*, Carol Ann Duffy
- *World Mythology*, Donna Rosenberg
  - *The Iliad*
  - *The Epic of Gilgamesh*
- *D'Aulaires' Book of Greek Myths*, Ingri and Edgar D'Aulaire
- *Beowulf* translated by Seamus Heaney
- "Eveline" & "Boarding House". *Dubliners*, James Joyce
- "The Cord" poem by Leanne O'Sullivan

Films

- *Pan's Labyrinth* (2006) Dir. Guillermo Del Toro
- *Arrival* (2016), Dir. Denis Villeneuve
- *Moana* (2016), Dir. John Musker and Ron Clements
- *Whiplash* (2014) Dir. Damien Chazelle
- *Troy* (2004) Dir. Wolfgang Petersen

Resource Texts

- *Classical Mythology: Images and Insights*, Harris, Stephen L. and Gloria Platzner. 3rd Ed. California: Mayfield Publishing Company, 2001. Print.
- *Archetypes in Life, Literature, and Myth*, Shelly Ni Tuama - Lesson 4: Manifestations of the Mother Goddess.
- *Achilles in Vietnam: Combat Trauma and the Undoing of Character*, Jonathan Shay

Independent Reading

	• *Song of Achilles*, Madeline Miller • *Circe*, Madeline Miller • *Grendel*, John Gardner
Student Learning Expectation & 21st Century Skills Information Literacy Critical Thinking Spoken Communication Written Performance	Interdisciplinary Connections Social Studies - Archeology, Anthropology, Prehistory, Psychology and Sociology.

Newtown Public Schools

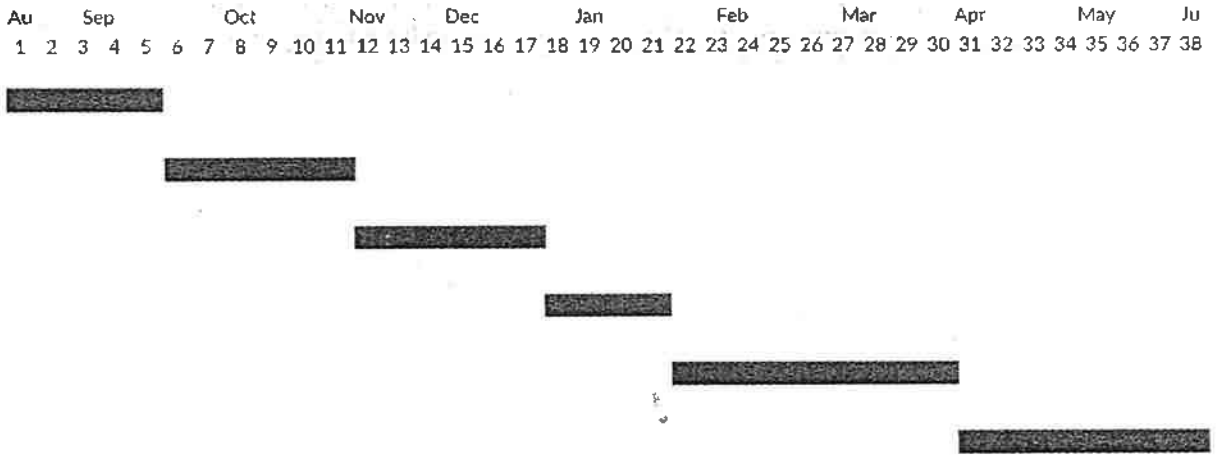
Atlas

Honors Physics

5 Curriculum Developers | Last Updated: Friday, Jan 14, 2022 by Lowell, Kim

Unit Calendar by Year

Unit	Lessons
Kinematics	0
Forces	0
Momentum and Energy	0
Rotational Motion	0
Electric and Magnetic Phenomena	0
Waves	0



6 Units found

Previous Year

Unit Planner: Kinematics
Honors Physics

Monday, January 3, 2022, 10:01 AM

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 1 - Week 5

Last Updated: Tuesday, November 2, 2021 by Kim Lowell

Kinematics

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Motion

Concepts: kinematics, rates, vector, projectiles, graphical analysis

G

Generalizations / Enduring Understandings

1. Graphical analysis or kinematic equations illustrate motion.

2. Time rates of change convey the motion of an object.

3. The independent and different nature of vertical and horizontal components of motion contribute to the parabolic path of a projectile.

4. Vector quantities have both magnitude and direction.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.

What is slope? (F)

What is the difference between distance and displacement? (C)

How is velocity and acceleration determined from a position-time graph? (C)

How is acceleration and position determined from a velocity-time graph? (C)

How do the characteristics of motion, position, velocity, acceleration, and time, relate to each other for motion in a given direction? (C)

2.

What is speed? (F)

What is velocity? (F)

What is acceleration? (F)

How are speed and velocity different? How are they the same? (C)

How is the motion of objects predicted and/or explained? (C)

3.

What is a vector? (F)

What is a scalar? (F)

How do vector and scalar quantities differ from each other, and in what ways do calculations with each quantity differ from each other? (C)

How do vectors help in describing motion in more than just one direction? (C)

What effect does gravity have on vertical motion? (C)

If there is no air resistance, how and why would it be dangerous to go outdoors on a rainy days? (C)

Is the layman term for free fall accurate for the physics definition? (P)

Which is more important, vectors or scalars? (P)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

CCSS: Grades 11-12

Reading: Science & Technical Subjects

3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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.

Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

WHST.11-12.1. Write arguments focused on discipline-specific content.

WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 1. Asking questions (for science) and defining problems (for engineering)

Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

Ask questions that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information.

Ask questions that arise from examining models or a theory, to clarify and/or seek additional information and relationships.

Ask questions to determine relationships, including quantitative relationships, between independent and dependent variables.

Ask questions to clarify and refine a model, an explanation, or an engineering problem.

Evaluate a question to determine if it is testable and relevant.

Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory.

Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.

Practice 2. Developing and using models

Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.

Design a test of a model to ascertain its reliability.

Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system.

Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.

Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled.

Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

Select appropriate tools to collect, record, analyze, and evaluate data.

Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Evaluate the impact of new data on a working explanation and/or model of a proposed process or system.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.

Apply techniques of algebra and functions to represent and solve scientific and engineering problems.

Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.).

Practice 6. Constructing explanations (for science) and designing solutions (for engineering)

Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.

Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.

Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.

Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.

Practice 7. Engaging in argument from evidence

Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.

Construct, use, and/or present an oral and written argument or counter-arguments based on data and evidence.

NGSS: Crosscutting Concepts

NGSS: 9-12

Crosscutting Statements

1. Patterns – Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.

Mathematical representations are needed to identify some patterns.

4. Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

When investigating or describing a system, the boundaries and initial conditions of the system need to be defined and their inputs and outputs analyzed and described using models.

Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.

Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.

7. Stability and Change – For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

Much of science deals with constructing explanations of how things change and how they remain stable.

Change and rates of change can be quantified and modeled over very short or very long periods of time. Some system changes are irreversible.

CT: Science Framework (2005)

CT: Grades 9-12

I. Inquiry

SCIENTIFIC INQUIRY • Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. • Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. • Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. SCIENTIFIC LITERACY • Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science. • Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. SCIENTIFIC NUMERACY • Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.

D INQ10. Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

D INQ6. Use appropriate tools and techniques to make observations and gather data.

D INQ7. Assess the reliability of the data that was generated in the investigation.

D INQ8. Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.

D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know-

Displacement, Distance, Speed, Velocity, Acceleration, Vector, Scalar, free fall, range, projectile motion,

instantaneous, average, resultant vector, vector components

Students must be able to-
-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.
-use representations and models to analyze situations or solve problems qualitatively and quantitatively

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

- Motion Detector Lab (https://www.cbsd.org/cms/lib/P...)
- Alternate Online Virtual Motion Detector Lab (http://ngsir.netfirms.com/englishhtm/Kinematics.htm)
- Alternate Online Virtual Motion Detector Lab (http://www.mste.uiuc.edu/murphy/MovingMan/MovingMan.html)
- Projectile Motion Lab (https://www.cbsd.org/cms/lib/P...)
- Alternate Online Virtual Projectile Motion Lab (https://phet.colorado.edu/en/simulation/legacy/projectile-motion)

Suggested Activities

- "Picket Fence" Laboratory (https://www.mustangps.org/Down...)
- Galileo Incline Lab (https://sites.google.com/site/...)
- Vector Treasure Hunt Activity (http://thephysicsaviary.com/Ph...)
- Alternate Online Virtual Vector Lab (https://phet.colorado.edu/en/simulation/vector-addition)

Assessments

Motion Detector Lab
Formative: Lab Assignment
Students move to match the graphs of different motion characteristics as a function of time. Student motion is captured and reproduced using motion detectors.
Motion Detector Lab.docx
Free Fall Lab
Formative: Lab Assignment
Student will analyze free fall motion moving through six different stations.
Free Fall Lab- Stations.docx
Test on 1-D Motion
Summative: Written Test
This is the summative assessment for 1-D Motion
test 1415.doc
Vector Map Lab

Resources

Professional & Student

Professional

- Giancoli, Douglas C. *Physics: Principles with Applications.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Teacher Edition.

Student

- Giancoli, Douglas C. *Physics: Principles with Applications.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition.
- http://www.physicsclassroom.com Basic background information on concepts in physics.

Formative: Lab Assignment Students will use vectors mathematically and graphically to find locations on a map/ vector map lab.doc **Projectile Lab** **Formative: Lab Assignment** Students will predict the range of a projectile launcher. Projectile Lab.doc **Projectile Motion Test** **Summative: Written Test** Summative test on projectile motion and vectors.	• Colorado PhET (https://phet.colorado.edu/)
Student Learning Expectation & 21st Century Skills Information Literacy Critical Thinking Spoken Communication Written Performance	Interdisciplinary Connections Students review and apply techniques learned in previous mathematics coursework on rates, algebraic rearrangement, and trigonometric functions.

Unit Planner: Forces
Honors Physics

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 6 - Week 11

Last Updated: Friday, January 14, 2022 by Kim Lowell

Forces

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Interaction

Concepts- Newton's laws, inertia, net force, equilibrium, weight, mass, centripetal, gravitational field

G

Generalizations / Enduring Understandings

1. Newton's three laws predict changes in motion.
2. Centripetal forces produce circular motion.
3. Objects with mass create a gravitational field.
4. Mass is a measure of the inertia of a body.
5. A new force produces an acceleration, an object in equilibrium experiences no acceleration.
6. Weight is dependent upon the position of a mass within a gravitational field.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.
What are Newton's Three Laws? (F)

What are the types of friction? (F)

What is normal force? (F)

How must normal force be drawn? (F)

How are forces physically/pictorially represented? (F)

How is a net force on an object determined? (C)

How can any side of a tug of war win if Newton's 3rd law is true? (C)

How is force related to changes in motions of objects? (C)

How can variables be manipulated to affect the movement of objects? (C)

How are various applications such as inclines and elevators represented with Newton's laws, force diagrams, and motion diagrams? (C)

Why does the same push change the motion of a

shopping cart more than the motion of a car? (C)

Can an athlete improve their performance using one of Newton's three laws of motion? (P)

2.

What is centripetal acceleration? (F)

How does centripetal acceleration depend upon the object's speed and the radius of the circle? (F)

Why is an object moving in a circle at a constant speed accelerated? (C)

What force causes centripetal acceleration? (C)

How is circular motion like and unlike linear motion? (C)

3.

What is the universal law of gravitation? (F)

What is a gravitational field? (F)

What is a field force? (F)

What is the difference between a field force and a contact force? (F)

How does Kepler's law relate to the law of universal gravitation? (C)

How can the speed of a satellite change? (C)

How does gravity affect the motion of planets and satellites? (C)

Why is the acceleration due to gravity constant on Earth's surface? (C)

Based on the law of gravity should the US create a colony on the moon? (P)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

CCSS: Grades 11-12

Reading: Science & Technical Subjects

3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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.

Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

WHST.11-12.1. Write arguments focused on discipline-specific content.

WHST.11-12.1a. 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.

WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science Performance Expectations (2013)

NGSS: HS Physical Sciences

HS.Forces and Interactions

Performance Expectations

HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

HS-PS2-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

Select appropriate tools to collect, record, analyze, and evaluate data.

Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points or improve performance relative to criteria for success or other variables.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.

Apply techniques of algebra and functions to represent and solve scientific and engineering problems.

Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.).

Practice 6. Constructing explanations (for science) and designing solutions (for engineering)

Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.

Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws

that describe the natural world operate today as they did in the past and will continue to do so in the future.

Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.

CT: Science Framework (2005)

CT: Grades 9-12

I. Inquiry

SCIENTIFIC INQUIRY • Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. • Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. • Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. SCIENTIFIC LITERACY • Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science. • Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. SCIENTIFIC NUMERACY • Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.

D INQ1. Identify questions that can be answered through scientific investigation.

D INQ10. Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

D INQ3. Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.

D INQ4. Design and conduct appropriate types of scientific investigations to answer different questions.

D INQ6. Use appropriate tools and techniques to make observations and gather data.

D INQ7. Assess the reliability of the data that was generated in the investigation.

D INQ8. Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.

D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

High School Physics

Motion and Forces Newton's laws predict the motion of most objects

When forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest.

The law F = ma is used to solve motion problems that involve constant forces.

When one object exerts a force on a second object, the second object always exerts a force of equal magnitude and in the opposite direction.

Applying a force to an object perpendicular to the direction of its motion causes the object to change direction.

Circular motion requires the application of a constant force directed toward the center of the circle.

Newton's laws are not exact but provide very good approximations unless an object is small enough that quantum effects become important.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know-

force, Newton's Laws, net force, inertia, friction, mass, weight, gravitational force, normal force, tension, coefficient of friction, equilibrium, free body diagrams, centripetal force, centripetal acceleration, frequency, period,

weightlessness, gravity, orbital speed, gravitational field, Newton's law of universal gravitation

Students must be able to-
-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.
-use representations and models to analyze situations or solve problems qualitatively and quantitatively

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

Core Activities

- Modified Atwood's Machine Laboratory

https://www.cerritos.edu/cmera...

- Alternate Online Virtual Force Lab

https://phet.colorado.edu/en/simulation/legacy/the-ramp

- Centripetal Force Lab

http://www.batesville.k12.in.u...

- Alternate Online Virtual Centripetal Force Lab

https://www.physicsclassroom.com/Physics-Interactives/Circular-and-Satellite-Motion/Uniform-Circular-Motion/Uniform-Circular-Motion-Interactive

Suggested Activities

- Newton's Third Law Activity
  - https://www.physicsclassroom.c...
- "Newton's Laws" Video
  - http://p2cdn4static.sharpschoo...
- Friction Laboratory
  - http://www.umsl.edu/~physics/f...

Assessments

Atwood Lab
Formative: Lab Assignment
Atwood Lab.doc
Centripetal Force Lab
Formative: Lab Assignment
Centripetal Force Lab.doc
Force Test
Summative: Written Test
~$st 1415.doc
Centripetal Force Test
Summative: Written Test
test 1415a.doc
Atwood Lab.doc

Resources

Professional & Student

Professional

- Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Teacher Edition.

Student

- Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition.
- http://www.physicsclassroom.com Basic background information on concepts in physics.
- Colorado PhET (https://phet.colorado.edu/)

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Connections can be made to social studies. Teachers can look and see how history affected what scientists thought of how the planets in the universe move.

Unit Planner: Momentum and Energy
Honors Physics

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 12 - Week 17

Last Updated: Friday, January 14, 2022 by Kim Lowell

Momentum and Energy

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Conservation

Concepts- Momentum, Impulse, energy, collisions, law of conservation

G

Generalizations / Enduring Understandings

1. The action of forces transfer energy and momentum.

2. The law of conservation of energy governs all energy transfers.

3. The law of conservation of momentum determines the results of a collision.

4. An impulse applied to a system results in a change in momentum.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.

What is work? (F)

How is power calculated? (F)

What is a closed system? (F)

What is the relationship between work and energy? (C)

How is energy created by a force? (C)

How is the energy stored or work done influenced by the choice of system? (C)

Based on impulse and force, should trampolines be banned? (P)

2.

What is kinetic energy? (F)

What is potential energy? (F)

In what way is energy conserved? (C)

How is energy transferred from one object to another? (C)

Based on energy conservation, is it better to sit in the front or the back of a rollercoaster? (P)

3.

What is momentum? (F)

Under what conditions is momentum conserved? (F)

How does Newton's third law relate to the law of conservation of momentum? (C)

How is momentum used to determine fault in car crashes? (C)

Is the layman definition of momentum accurate for the physics definition? (P)

4.

What is impulse? (F)

How can impulse change the momentum of an object or system? (C)

How can a baseball player improve their swing to hit more homeruns? (P)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

CCSS: Grades 11-12

Reading: Science & Technical Subjects

3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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.

Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

WHST.11-12.1. Write arguments focused on discipline-specific content.

WHST.11-12.1a. 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.

WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science Performance Expectations (2013)

NGSS: HS Physical Sciences

HS.Forces and Interactions

Performance Expectations

HS-PS2-2. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

HS-PS2-3. Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.*

HS.Energy

Performance Expectations

HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 1. Asking questions (for science) and defining problems (for engineering)

Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory.

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

Select appropriate tools to collect, record, analyze, and evaluate data.

Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.

Apply techniques of algebra and functions to represent and solve scientific and engineering problems.

Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.).

Practice 6. Constructing explanations (for science) and designing solutions (for engineering)

Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.

CT: Science Framework (2005)

CT: Grades 9-12

I. Inquiry

SCIENTIFIC INQUIRY • Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. • Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. • Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. SCIENTIFIC LITERACY • Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science. • Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. SCIENTIFIC NUMERACY • Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.

D INQ1. Identify questions that can be answered through scientific investigation.

D INQ10. Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

D INQ3. Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.

D INQ4. Design and conduct appropriate types of scientific investigations to answer different questions.

D INQ5. Identify independent and dependent variables, including those that are kept constant and those used as controls.

D INQ6. Use appropriate tools and techniques to make observations and gather data.

D INQ7. Assess the reliability of the data that was generated in the investigation.

D INQ8. Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.

D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

High School Physics

Conservation of Energy and Momentum The laws of conservation of energy and momentum provide a way to predict and describe the movement of objects

Kinetic energy can be calculated by using the formula E = (1/2)mv2.

Changes in gravitational potential energy near Earth can be calculated by using the formula (change in potential energy) = mgh.

Momentum is calculated as the product mv.

Momentum is a separately conserved quantity different from energy.

An unbalanced force on an object produces a change in its momentum.

The principles of conservation of momentum and energy can be used to solve problems involving elastic and inelastic collisions.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know-

work, energy, kinetic energy, potential energy, gravitational potential energy, elastic potential energy, mechanical energy, power, momentum, impulse, elastic collision, inelastic collision, conservative, nonconservative, conservation laws, work-energy theorem

Students must be able to-

-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.
-use representations and models to analyze situations or solve problems qualitatively and quantitatively

- 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.

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

Core Activities

- Work and Power Lab with Stairs
  - https://www.nhvweb.net/nhhs/sc...
- Conservation of Mechanical Energy Lab
  - http://mrsj.exofire.net/ipc/do...
- "Explosions" and the Conservation of Momentum Lab
  - https://rucsm.org/physics/labd...
- Alternate Online Virtual Conservation of Momentum Lab

https://www.physicsclassroom.com/Physics-Interactives/Momentum-and-Collisions

Suggested Activities

- Impulse and Change in Momentum Lab
  - https://academics.uccs.edu/rgi...
- Alternate Online Virtual Conservation of Mechanical Energy Lab

https://phet.colorado.edu/en/simulation/legacy/energy-skate-park

- Egg Drop Activity
  - https://stem.northeastern.edu/...

Assessments

Work and Power Stair Activity
Formative: Lab Assignment
Stair Lab
Conservation of Energy Lab
Formative: Lab Assignment
Conservation of Energy Lab.doc
Conservation of Momentum Lab
Formative: Lab Assignment
Conservation of Momentum Lab.docx
Car Crash Reconstruction
Formative: Group Project
ACCIDENT RECONSTRUCTION 201415.docx
Conservation of Energy Test
Summative: Written Test
test 1516.doc
Momentum and Impulse Test
Summative: Written Test
test 1516 make up use makeup 1819.doc

Resources

Professional & Student

Professional

- Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Teacher Edition.

Student

- Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition.
- http://www.physicsclassroom.com Basic background information on concepts in physics.
- Colorado PhET (https://phet.colorado.edu/)

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication

Interdisciplinary Connections

Students can relate what they are learning about work, power, and kinetic energy to activities they are doing in physical education classes.

Written Performance	

Unit Planner: Rotational Motion
Honors Physics

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 18 - Week 21

Last Updated: Friday, January 14, 2022 by Kim Lowell

Rotational Motion

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Correlation

Concepts- rotational motion, torque, angular momentum, equilibrium, inertia

G

Generalizations / Enduring Understandings

1. Mathematical formulas predict rotational motion.

2. A force exerted at an angle, a distance away from the pivot point generates a torque and can change the angular momentum of the system.

3. Conservation laws govern the motion of rotating objects.

4. Objects that have no net torque are in equilibrium.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.
What is angular displacement? (F)

What is angular velocity? (F)

What is angular acceleration? (F)

How are angular displacement, angular velocity, and angular acceleration related? (C)

What links the linear and rotational motion of an object? (C)

2.
What is torque? (F)

How are torque and angular acceleration calculated? (F)

What is angular momentum? (F)

What is moment of inertia? (F)

Why are long wrenches more effective? (C)

How do balanced forces cause rotation? (C)

How does the choice of system and rotation point affect the forces that cause a torque on an object or a system? (C)

How does a system at rotational equilibrium compare to a system in translational equilibrium? (C)

How does an external net torque change the angular momentum of a system? (C)

What factors affect the moment of inertia for a rotating object? (C)

How is the moment of inertia found for a rotating object? (C)

3.
What is conservation of angular momentum? (F)

Why is a rotating bicycle wheel more stable than a stationary one? (C)

	Why does a spinning skater accelerate when his/her arms are brought closer to the body? (C) How does conservation of energy apply to rotating objects? (C) Which conservation law is the most important? (P)

Standard(s)

Connecticut Core Standards / Content Standards

GRADUATION STANDARDS

Graduation

PROBLEM SOLVING

Standard 1: The student demonstrates use of the scientific method and applies appropriate procedures to solve and communicate an authentic problem or situation.

Identifies the problem adequately.

Develops an action plan that addresses the problem adequately.

Collects accurate and relevant information, data, or media to adequately address the problem.

Demonstrates or applies a solution to the problem based on the data collected.

Formulates a conclusion that adequately addresses the problem.

The writing generally follows the given format.

CCSS: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

CCSS: Grades 11-12

Reading: Science & Technical Subjects

3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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.

Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and

relevant and sufficient evidence.

WHST.11-12.1. Write arguments focused on discipline-specific content.

WHST.11-12.1a. 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.

WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science Performance Expectations (2013)

NGSS: HS Physical Sciences

HS.Energy

Performance Expectations

HS-PS3-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.*

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 1. Asking questions (for science) and defining problems (for engineering)

Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

Ask questions to determine relationships, including quantitative relationships, between independent and dependent variables.

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

Select appropriate tools to collect, record, analyze, and evaluate data.

Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Create and/or revise a computational model or simulation of a phenomenon, designed device, process, or system.

Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe

and/or support claims and/or explanations.

Apply techniques of algebra and functions to represent and solve scientific and engineering problems.

Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.).

Practice 6. Constructing explanations (for science) and designing solutions (for engineering)

Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.

Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.

Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.

Practice 8. Obtaining, evaluating, and communicating information

Obtaining, evaluating, and communicating information in 9–12 builds on K–8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs.

Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.

Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically).

CT: Science Framework (2005)

CT: Grades 9-12

I. Inquiry

SCIENTIFIC INQUIRY • Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. • Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. • Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. SCIENTIFIC LITERACY • Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science. • Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. SCIENTIFIC NUMERACY • Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.

D INQ1. Identify questions that can be answered through scientific investigation.

D INQ10. Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

D INQ3. Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.

D INQ4. Design and conduct appropriate types of scientific investigations to answer different questions.

D INQ5. Identify independent and dependent variables, including those that are kept constant and those used as controls.

D INQ6. Use appropriate tools and techniques to make observations and gather data.

D INQ7. Assess the reliability of the data that was generated in the investigation.

D INQ8. Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.

D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

High School Physics

Motion and Forces Newton's laws predict the motion of most objects

When forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know-

torque, static equilibrium, lever arm, angular displacement, angular speed, angular acceleration, tangential velocity, angular momentum, rotational kinetic energy, rotational inertia, torque, rotational equilibrium, conservation of angular momentum

Students must be able to-

-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.
-use representations and models to analyze situations or solve problems qualitatively and quantitatively

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

Core Activities

- Torque Lab
  - http://www.phy.olemiss.edu/lab...
- Alternative online level lab

https://phet.colorado.edu/en/simulation/balancing-act

- Mobile Project
  - http://msquacksphysics.weebly....

Suggested Activities

- Conservation of Rotational Energy lab
  - https://physics.mercer.edu/lab...

Assessments

Torque Lab

Resources

Professional & Student

Formative: Lab Assignment phet torque lab.docx **Mobile Project** **Formative: Group Project** mobile 1819.doc Mobile Project Rubric update 2.15.pdf **Rotational Motion Test** **Summative: Written Test** test 1617 make up.doc	Professional • Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Teacher Edition. Student • Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition. • http://www.physicsclassroom.com Basic background information on concepts in physics. • Colorado PhET (https://phet.colorado.edu/)
Student Learning Expectation & 21st Century Skills Information Literacy Critical Thinking Spoken Communication Written Performance	Interdisciplinary Connections Students can see how mobiles use science as well as artistic principles in their designs.

Unit Planner: Electric and Magnetic Phenomena
Honors Physics

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 22 - Week 30

Last Updated: Friday, January 14, 2022 by Kim Lowell

Electric and Magnetic Phenomena

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Connections

Concepts- charge, Coulomb's Law, electric field, magnetic field, DC circuits, induction, force, alternating current

G

Generalizations / Enduring Understandings

1. Objects with charge create an electric field.

2. The force between charges are governed by Coulomb's Law.

3. Conservation laws govern how a DC circuit behaves.

4. Moving electric charges produce magnetic fields and moving magnets induce electric fields.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.
What are the differences between conductors and insulators? (F)

How are objects charge by conduction and induction? (F)

What is an electric field? (F)

What are electric field lines? (F)

How do electrical charges behave in an electric field? (C)

Why does a balloon stick on the ceiling, if rubber is an insulator? (C)

2.

What is the relationship between electric forces, charges, and distance? (F)

What is an inverse square law? (F)

How are electrostatic and gravitational forces alike? (C)

How are electrostatic and gravitational forces different? (C)

3.
What is voltage, current, and resistance? (F)

What is Ohm's law? (F)

What are series and parallel circuits? (F)

What is the difference between AC and DC? (F)

What conditions affect the voltage, the current, and the resistance in a circuit? (C)

How does changing shape alter the value of something? (C)

Why are Christmas lights wired in series but house lights wired in parallel? (C)

4.

	What is the right hand rule? (F) How are currents generated by magnetic fields? (C) How are charges affected by magnetic fields? (C) Would life be different if electric fields and magnetic fields did not induce one another? (P)

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Connecticut Core Standards / Content Standards

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CCSS: Grades 11-12

Reading: Science & Technical Subjects

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Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

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WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science Performance Expectations (2013)

NGSS: HS Physical Sciences

HS.Forces and Interactions

Performance Expectations

HS-PS2-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.

HS-PS2-5. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 1. Asking questions (for science) and defining problems (for engineering)

Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

Ask questions to determine relationships, including quantitative relationships, between independent and dependent variables.

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

Select appropriate tools to collect, record, analyze, and evaluate data.

Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Analyze data to identify design features or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.

Apply techniques of algebra and functions to represent and solve scientific and engineering problems.

Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.).

Practice 6. Constructing explanations (for science) and designing solutions (for engineering)

Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.

CT: Science Framework (2005)

CT: Grades 9-12

I. Inquiry

SCIENTIFIC INQUIRY • Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. • Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. • Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. SCIENTIFIC LITERACY • Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science. • Scientific literacy also

includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. SCIENTIFIC NUMERACY • Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.

D INQ10. Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

D INQ3. Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.

D INQ4. Design and conduct appropriate types of scientific investigations to answer different questions.

D INQ5. Identify independent and dependent variables, including those that are kept constant and those used as controls.

D INQ6. Use appropriate tools and techniques to make observations and gather data.

D INQ7. Assess the reliability of the data that was generated in the investigation.

D INQ8. Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.

D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

High School Physics

Electric and Magnetic Phenomena Electric and magnetic phenomena are related and have many practical applications.

The voltage or current in simple direct current (DC) electric circuits constructed from batteries, wires, resistors, and capacitors can be predicted using Ohm's law.

Any resistive element in a DC circuit dissipates energy, which heats the resistor.

The power in any resistive circuit element can be calculated by using the formula Power = 12R.

Charged particles are sources of electric fields and are subject to the forces of the electric fields from other charges.

Magnetic materials and electric currents (moving electric charges) are sources of magnetic fields and are subject to forces arising from the magnetic fields of other sources.

Changing magnetic fields produce electric fields, thereby inducing currents in nearby conductors.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know:

electric charge, Coulomb's Law, conductors, insulators, conduction, induction, electric field, electrostatic force, electrostatic potential, potential difference, capacitance, equipotential surfaces, electron volt, voltage, current, resistance, circuit, Ohm's Law, electromotive force, magnetic field, induced current, electromagnetic induction , magnetic flux, electric motor, electric generator, transformer, Lenz's Law, Faraday's Law

Students must be able to-

-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.

-use representations and models to analyze situations or solve problems qualitatively and quantitatively

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

Core Activities

- Electrostatic Lab
  - https://manoa.hawaii.edu/explo...
- Ohm's Law Lab
  - https://www.phy.olemiss.edu/la...
- Alternative Online Ohm's Law Lab
  - https://phet.colorado.edu/en/simulation/legacy/ohms-law

Suggested Activities

- Balloon Lab
  - http://www.physicsinmotion.net...
- Play-Doh Lab
  - https://aapt.scitation.org/doi...
- Alternative Online Play-Doh Lab

http://www.pulsedpower.net/Applets/Electronics/resistance2/resistance.html

- Circuit Lab
  - https://www.phy.olemiss.edu/la...
- Alternative Online Circuit Lab

https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc-virtual-lab

- Drawing Magnetic Field Lines
  - https://s3.wp.wsu.edu/uploads/...
- Magnetic Fields of Coil Lab
  - http://physics.ham.miamioh.edu...
- Making a Motor
  - https://www.spsnational.org/th...

Assessments

Electrostatic Lab
Formative: Lab Assignment


Electrostatic Lab

Ohm's Law Lab
Formative: Lab Assignment

Resources

Professional & Student

Professional

- Giancoli, Douglas C. *Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ:

Ohm's Law Lab **Building a Motor** **Formative: Group Project** Instructions for building a motor.doc **Electrostatic Test** **Summative: Written Test** test 1516 make up.doc **Current Electricity Test** **Summative: Written Test** test 1415.doc **Electricity and Magnetism Test** **Summative: Written Test** test 1516.doc	Prentice Hall, 1998. Print. Teacher Edition. Student • Giancoli, Douglas C.*Physics: Principles with Applications.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition. • http://www.physicsclassroom.com Basic background information on concepts in physics. • Colorado PhET (https://phet.colorado.edu/)
Student Learning Expectation & 21st Century Skills Information Literacy Critical Thinking Spoken Communication Written Performance	Interdisciplinary Connections

Unit Planner: Waves
Honors Physics

Monday, January 3, 2023, 10:19AM

Newtown High School / 2022-2023 / Grade 11 / Science / Honors Physics / Week 31 - Week 38

Last Updated: Friday, January 14, 2022 by Kim Lowell

Waves

Canfield, Christian; Dyer, Michael; Lowell, Kim; Smith, Timothy; Torrance, Melissa

- Unit Planner
- Lesson Planner

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

Behavior

Concepts- waves, light, sound, energy, interference, mathematical formulas, medium boundaries

G

Generalizations / Enduring Understandings

1. Waves transfer energy and momentum without matter.

2. Mathematical formulas predict the qualities of sound.

3. Medium boundaries manipulate waves.

4. Light and sound travel as waves.

5. Waves can exhibit constructive or destructive interference.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

1.
What is the difference between transverse and longitudinal waves? (F)

What is the relationship between wave speed, wavelength, and frequency? (F)

How does a restoring force differ from a "regular" force? (F)

What affects the period of a pendulum? (F)

How does the presence of restoring forces predict and lead to harmonic motion? (C)

What is the Doppler Effect? (F)

How does the motion of an adult and a child on a swing differ? (C)

Why does a police siren sound different when it is moving toward you than when it is moving away from you? (C)

2.
What is a node? (F)

What is an antinode? (F)

Why do different guitar strings have different pitches? (C)

Why does a flute have a higher pitch than a trumpet? (C)

3.
What is the law of reflection? (F)

How does Snell's Law predict how light will bend as it travels from one medium to another? (F)

Why are optical fibers preferred over electrical cables to send information? (F)

What are the practical applications of reflection and refraction? (C)

Does an object become invisible? (C)

Which lens, diverging or converging, is more useful? (P)

4.

	What type of wave is sound? (F) What type of wave is light? (F) How are sound and light waves similar? (C) How are sound and light waves different? (C) Many movies sometimes do not accurately depict science principles. What mistakes are made about sound and light waves in movies? (P) 5. What happens when two waves meet? (F) What is a standing wave? (F) How can auditoriums be designed to minimize areas of destructive interference? (C)

Standard(s)

Connecticut Core Standards / Content Standards

GRADUATION STANDARDS

Graduation

PROBLEM SOLVING

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The writing generally follows the given format.

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CCSS: Grades 11-12

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Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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.

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Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

WHST.11-12.1. Write arguments focused on discipline-specific content.

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WHST.11-12.1e. Provide a concluding statement or section that follows from or supports the argument presented.

NGSS: Science Performance Expectations (2013)

NGSS: HS Physical Sciences

HS.Waves and Electromagnetic Radiation

Performance Expectations

HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

HS-PS4-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

HS-PS4-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.*

NGSS: Science and Engineering Practices

NGSS: 9-12

Practice 1. Asking questions (for science) and defining problems (for engineering)

Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

Define a design problem that involves the development of a process or system with interacting components and criteria and constraints that may include social, technical, and/or environmental considerations.

Practice 2. Developing and using models

Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.

Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.

Develop a complex model that allows for manipulation and testing of a proposed process or system.

Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.

Practice 3. Planning and carrying out investigations

Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled.

Select appropriate tools to collect, record, analyze, and evaluate data.

Practice 4. Analyzing and interpreting data

Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

Compare and contrast various types of data sets (e.g., self-generated, archival) to examine consistency of measurements and observations.

Practice 5. Using mathematics and computational thinking

Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

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Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.

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D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.

High School Physics

Waves Waves have characteristic properties that do not depend on the type of wave

Waves carry energy from one place to another.

Transverse and longitudinal waves exist in mechanical media, such as springs and ropes, and in the earth as seismic waves.

Wavelength, frequency, and wave speed are related.

Sound is a longitudinal wave whose speed depends on the properties of the medium in which it propagates.

Radio waves, light, and X-rays are different wavelength bands in the spectrum of electromagnetic waves whose speed in a vacuum is approximately 3 x 108m/s, and less when passing through other media.

Waves have characteristic behaviors such as interference, diffraction, refraction and polarization.

Beats and the Doppler Effect result from the characteristic behavior of waves.

Critical Content & Skills

*What students must **KNOW and be able to DO***

Students must know-

simple harmonic motion, spring constant, amplitude, cycle, frequency, period, equilibrium position, longitudinal wave, transverse wave, resonance, superposition, interference, Doppler Effect, wavelength, wave velocity, reflection, refraction, Snell's Law, critical angle, total internal reflection, virtual image, focal point, focal length, refraction, electromagnetic spectrum

Students must be able to-

-justify the selection of a mathematical routine to solve problems.
-apply mathematical routines to quantities that describe natural phenomena.
-design a plan for collecting data to answer a particular scientific question.
-analyze data to identify patterns or relationships.
-use representations and models to analyze situations or solve problems qualitatively and quantitatively

-analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

-develop and/or use a model to generate data to support explanations, analyze systems, or solve problems.

Core Learning Activities

Core Activities

- Speed of Sound Lab
  - https://www.mines.edu/teacherp...
- Optical Bench Lab
  - https://www.homesciencetools.c...
- Alternative Online Optical Bench Labs

https://www.physicsclassroom.com/Physics-Interactives/Refraction-and-Lenses/Optics-Bench

Suggested Activities

- Light Box Reflection/Refraction Activity
  - http://www.umsl.edu/~physics/f...
- Alternative Light Box Lab

  https://www.physicsclassroom.com/Physics-Interactives/Refraction-and-Lenses/Refraction
- Refraction of Light/ Snell's Law
  - https://groups.physics.northwe...
- Alternative Online Refraction Lab
  - https://phet.colorado.edu/en/s...

Assessments

Speed of Sound Lab
Formative: Lab Assignment
data for speed of sound lab.docx
Musical Instrument Project
Formative: Group Project
musical instrument project.docx
Snell's Law Lab
Formative: Lab Assignment
Snell's Law Lab.docx
Optical Bench Lab
Formative: Lab Assignment
Optical Bench Lab
Waves and Sound Test
Summative: Written Test
test 1516.doc
Light Test
Summative: Written Test
test 1516.doc

Resources

Professional & Student

Professional

- Giancoli, Douglas C.*Physics: Principles with Applications*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Teacher Edition.

Student

- Giancoli, Douglas C.*Physics: Principles with Applications.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 1998. Print. Student Edition.
- http://www.physicsclassroom.com Basic background information on concepts in physics.
- Colorado PhET (https://phet.colorado.edu/)

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Students can connect what they are learning about sound to the musical instruments that they play in band.

DRAFT # NEWTOWN PUBLIC SCHOOLS 2023-2024 SCHOOL CALENDAR **DRAFT**

March 7, 2023

AUGUST 2(6)

M	T	W	TH	F
			24	25
28	29	30	31	

24-All Teachers Report
24, 25, 28, 29 –Staff Development Days
30 – Students Report

SEPTEMBER 19(19)

M	T	W	TH	F
				1
4	5	6	7	8
11	12	13	14	15
18	19	20	21	22
25	26	*27	28	29

4 - Labor Day - Schools Closed
25 -Yom Kippur – Schools Closed
*27-3 hr. Early Dismissal – K-6 Only Staff Development

OCTOBER 22 (22)

M	T	W	TH	F
2	3	* 4	5	6
9	10	11	12	13
16	17	*18	*19	*20
23	24	25	26	27
30	31			

*4 - 3 hr. Early Dismissal - Staff Dev.
*18, 19, 20--3 hr. early dismissal-Elementary, Reed and Middle School Conferences

NOVEMBER 18 (19)

M	T	W	TH	F
		1	2	3
6	*--	8	9	10
13	14	* 15	*16	17
20	21	22	23	24
27	28	29	30	

*7-Election Day-Schools Closed for Students, Staff Development
*15 & 16-3 hr. Early Dismissal High School Conferences
22, 23, 24-Thanksgiving Recess

DECEMBER 16(16)

M	T	W	TH	F
				1
4	5	6	7	8
11	12	13	*14	15
18	19	20	21	*22
25	26	27	28	29

*14 – 2 hr. Delayed Opening - Staff Self-Directed
*22--3 hr. Early Dismissal - Holiday
25-29-Holiday Recess

JANUARY 21(21)

M	T	W	TH	F
1	2	3	4	5
8	9	10	11	12
15	16	17	18	19
22	23	24	25	26
29	30	*31		

1 - *New Year's Day – Schools Closed
15-Martin Luther King Day - Schools Closed
*31 – 3 hr. Early Dismissal – Staff Development

FEBRUARY 18(18)

M	T	W	TH	F
			1	2
5	6	7	8	9
12	13	14	15	16
19	20	21	22	23
26	27	28	29	

16 – 20 Schools Closed

MARCH 20(20)

M	T	W	TH	F
				1
4	5	6	7	8
11	12	13	*14	*15
18	19	20	*21	* 22
25	26	*27	28	29

*14 & 15-3 hr. Early Dismissal-Elem, Reed and Middle School Conferences (21 & 22 makeups)
*14 -High School Conferences
(21- High School make-up day)
*27 – 3 hr. Early Dismissal 7-12 Only-PSAT/SAT Testing Day/Staff Dev.
29 - Good Friday - Schools Closed

APRIL 17(17)

M	T	W	TH	F
1	2	3	4	5
8	9	10	11	12
15	16	17	18	19
22	23	24	25	26
29	30			

15-19 - Schools Closed

MAY 22(22)

M	T	W	TH	F
		1	2	3
6	7	8	9	10
13	14	*15	16	17
20	21	22	23	24
27	28	29	30	31

*15- 3 hr. Early dismissal - Staff Dev.
27-Memorial Day- Schools Closed

JUNE 7(7)

M	T	W	TH	F
3	4	5	6	7
10	☼11	12	13	14
17	18	19	20	21
24	25	26	27	28

☼-Projected last day of school
19 – Juneteenth – Schools Closed for staff & students if schools is in session

Please Note:
State of Connecticut mandates 180 calendar days for students. Beyond the projected June 11 date, school cancellation days will be made up by adding days through June.
Last 3 days of the school year will be early dismissals.

Please Note: Shaded calendar days = all schools closed for staff and students

Open House Dates: Elementary: Sept. 12 & 13
Reed Intermediate: Sept. 7
Middle School: Aug. 31 gr. 7, Sept. 6 gr. 8
High School: Spt. 14

Student Days – 182
Teacher Days – 187
Adopted:

Personnel Certified

Tutoring

In accordance with standard professional ethics, no teacher shall ~~teach~~ privately ~~(~~tutor~~)~~ (for pay) any students ~~of any school where such teacher has classes~~ for which the teacher has instructional responsibilities. ~~This shall not apply to teachers of homebound children employed by the Board of Education.~~ This does not exclude teachers employed by the Board from instructing homebound children. ~~The instruction of students in a teacher's class shall be part of his/her regular duty. These students shall be entitled to all the reasonable amount of time that is needed or can be given to them.~~

Legal Reference: Connecticut General Statutes

53392a 53392e All related to academic crimes.

53392b Preparation of assignments for students attending educational institutions prohibited.

PROFESSIONAL DEVELOPMENT

Newtown Public Schools' goals state that the district "will plan for and encourage professional development and will maintain an evaluation program that will ensure a top level professional staff." In order to make a commitment to quality education, the Board of Education shall attempt to provide sufficient funds to plan and implement an ongoing staff development program.

The Board of Education directs the Superintendent of Schools, in consultation with and with the involvement of the staff, to plan and implement such a comprehensive program of staff development. The Superintendent shall develop the criteria under which he or she shall approve a system of courses, workshops, seminars, and other special projects.

The Superintendent shall periodically present reports of the professional development program to the Board of Education.

Reference: CGS 10-220a

Adopted 5/10/83
Amended 10/10/95

CONTINUING EDUCATION UNITS (CEU'S)

The Newtown Board of Education will provide to its certified employees, at no cost, eighteen (18) hours of professional development activities annually for CEU's. In addition, the Newtown Board of Education will award CEU equivalence for proposals from Newtown teachers that meet State and local requirements.

A professional development activity of quality is one designed to maintain, enrich, or improve the skills, knowledge, and abilities needed by an educator to meet a professional responsibility or interest, or to address a district or building goal. In general, only those programs that are rigorous enough and long enough to be a significant educational experience and impart information on developed skills and abilities that are applicable to the professional field are appropriate for CEU's. The overriding consideration in determining whether a specific program qualifies for CEU's is that it contributes directly to the professional competence of an individual and moves a district, school, department, or program closer to the achievement of a stated goal or objective.

Reference: CGS 10-145(L), 10-220

Adopted 5/9/89
Amended 10/10/95

SOLICITING AND SELLING

Employees shall not use school time or school facilities in connection with any personal activity for financial profit outside the regular school program. Any violation of this provision shall be an act of insubordination.

Adopted

TUTORING STUDENTS

Should special tutoring be recommended, it is important that both the school system and the teacher(s) be protected from a possible charge involving a conflict of interest.

In general, teachers shall not accept remuneration for tutorial services to a student enrolled in their regular class. An exception might be made in the instance of a student requiring tutorial service who is absent from school as the result of an extended illness or some disability and/or is enrolled in some area of specialized or advanced subject matter where a suitable tutor cannot be located.

Adopted 2/5/80
Amended 10/10/95

Please Note: These minutes are pending Board approval.

Board of Education
Newtown, Connecticut

Minutes of the Board of Education special meeting on Wednesday, February 22, 2023 at 12:00 p.m. in the Board of Education Conference room at 3 Primrose Street.

Present: D. Zukowski, Chair
J. Vouros, Vice Chair
D. Ramsey, Secretary
J. Kuzma
C. Melillo

Item 1 – Call to Order
Ms. Zukowski called the meeting to order at 12:07 p.m.

MOTION: Mr. Ramsey moved that the Board of Education go into executive session for the purpose of discussing confidential student records. Mr. Vouros seconded. Motion passes unanimously.

Item 2 – Student Expulsion Hearing
The Board was provided with information regarding the student and deliberated on the matter.

MOTION: Mr. Ramsey moved that the Newtown Board of Education accept the stipulated agreement entered into between the Administration and the Parents of the Student who is the subject of this hearing regarding the Student's expulsion from the Newtown Public Schools, and that the Student who is the subject of this hearing shall be expelled from the Newtown Public Schools according to the terms and conditions of the stipulated agreement. Mrs. Kuzma seconded. Motion passes unanimously.

MOTION: Mr. Ramsey moved to adjourn. Mr. Vouros seconded. Motion passes unanimously.

Item 3 – Adjournment
The meeting adjourned at 12:15 p.m.

Respectfully submitted:

_____
Donald Ramsey
Secretary

Please Note: These minutes are pending Board approval.

Board of Education
Newtown, Connecticut

Minutes of the Board of Education meeting held on February 22, 2023, at 7:00 p.m. in the Reed Intermediate School library, 3 Trades Lane.

D. Zukowski, Chair
J. Vouros, Vice Chair
D. Ramsey, Secretary
D. Cruson
J. Kuzma
J. Larkin
A. Plante
K. Kunzweiler
D. Godino
C. Melillo
A. Uberti
T. Vadas
6 Staff
5 Public
1 Press

Ms. Zukowski called the meeting to order at 7:05 p.m.

Item 1 – Pledge of Allegiance

MOTION: Mrs. Plante moved to table the Legislative Update to be untabled no later than before Item 6. Mrs. Larkin seconded. Motion passes unanimously.

Item 3 – Consent Agenda

MOTION: Mrs. Plante moved that the Board of Education approve the consent agenda which includes the correspondence report. Mr. Cruson seconded. Motion passes unanimously.

Item 4 – Public Participation

Item 5 – Reports

Chair Report: Ms. Zukowski spoke about the busy January and thanked the Board on behalf of the students, families, staff and Town for their dedication during the budget process. Mr. Melillo introduced our budget to the Board of Finance last Thursday and was well received.

Superintendent's Report: Mr. Melillo reported that the State of Connecticut unanimously approved free meals for the rest of the school year. The Newtown High School drama production "Into the Woods" will be held March 16 to 19. The K-12 art teachers will have two shows at the Municipal center April 1 to 16 and the Hawley art show will be April 20 to 27.

Committee Reports:

Mr. Cruson said there were two Policy meetings where the suspension and expulsion policy was discussed along with the 4000 series regarding staff. They also approved the tutoring policy to bring to the Board and will work on health-related staff policies.

Mr. Vouros said the Curriculum and Instruction Committee met February 14 and discussed the Myth and the Modern World curriculum. There was also a discussion on the training plan for the new K-4 reading program.

Mrs. Larkin reported that the CFF Committee met last week and discussed the financial report and the extension of Smart funds for the free lunch. They discussed transportation and Mr. Gerbert gave an update on the Hawley HVAC project which is on time and they are expected to be out of Hawley in April. There was an update on the Middle Gate playground a potential update to the non-lapsing fund policy.

Mr. Cruson noted the Security and Safety Committee met last Thursday. Three items discussed were the middle school students behavior in Town. The administrators have been in contact with the busineses so it is being dealt with. The second item was regarding the building project next to Hawley School. They will put up a 5-foot security fence which will include plantings. The third item was regarding the table top exercise on April 4 which Board members are invited to observe. Please let him know if anyone will attend and he will share that with Mark Pompano.

Mr. Vouros reported that the high school PTSA announced the five first place winners in their Reflections Contest. The winners are Daniella Guerrieri, grade 12, for her essay "Fragments of a Broken Home," Ella Rena, grade 10, with a dance titled "The Language of Satin and Ribbons," Jules Kessler, grade 11, for his music submission "Another 10 Years," Lily Mindenhall, grade 12, for a film titled "When you Least Expect It,", and Julia Arbesman, grade 10, for a film titled "Inspiring Characters." He thanked the committee headed by Melissa Beylouni and congratulated the students.

Student Representatives Report:
Ms. Kirtana reported that students from the Hope Squad organized a Valentine's Day activity. Winter sports are approaching their championship competition. The Jazz Band visited UCONN for the 2023 Jazz Festival. French and Spanish students celebrated Mardi Gras and Carnavale last week.
Mr. Godino reported that English I students performed the famous balcony scene from Romeo and Juliet. Members of the Hawks Honors Association visited the middle school regarding what to expect at NHS.

MOTION: Mrs. Plante moved to untable the Legislative Update. Mrs. Larkin seconded. Motion passes unanimously.

Item 2 – Legislative Update
Senator Hwang thanked the Board and acknowledged the student Board members.
Representative Bolinsky thanked the Board for having them at the meeting.

Mrs. Larkin asked about the ECS and how cost sharing would impact Newtown.
Senator Hwang said the ECS formula is critical to update Boards. We also have a concept bill raised on school buses and how to correct this critical issue. He complimented Mr. Melillo who is cognizant of learning loss and the fiscal challenges on the community.

Mrs. Kuzma asked if there were any regulations regarding special education outplacement and how much they can charge districts.
Representative Bolinsky said we don't have a good handle on the costs and need to have someone accountable at the State level. We intend to put in protections.

Ms. Zukowski asked them to define fully funded.
Representative Bolinsky said the concept is to fully fund excess cost but they are not sure what the number will be.
Senator Hwang urged the Board to be disciplined in understanding the budget. There's a lot of money in these proposals but to use caution to not count on all of that money coming to you.

Representative Bolinsky spoke about reading literacy programs The Commissioner's office understands the waiver process is complicated with a February 28 deadline.

Mrs. Larkin asked if there was transportation help for districts because the families are paying the price and will there be help from the State or Department of Education.

Senator Hwang said this is a student safety process and operational nightmare. He spoke to three points regarding this issue. The first is to fully understand why there is a critical shortage so they asked to the Commissioner of the DMV to accelerate the cdl licensing process. The second is to have the conversation with bus companies to ask them the structural needs and policy assistance they could offer them and the third is that the owners said it isn't much about salary but about the benefits to keep drivers. He proposed some cost saving recommendations. They are working on a bill that will incorporate those things because this is a priority.

Representative Bolinsky said we have to look at the statutory requirements. A consolidation is also possible because some students never take the bus.

Ms. Zukowski said the higher number of tiers allows the drives to make more money. We have a two-tier system now and some have said we should have three tiers.

Mr. Melillo said we went to a two-tier system which allows the high school to start later and was educationally sound. The bus company decided how to compensate their drivers. We are almost being pushed to compromise an educationally sound system by moving the tiers.

Mr. Vouros said to keep in mind that we spent years on this and did wonderful research on the health and benefit of students to have a schedule that was best for them. We aren't going to jeopardize that by discussing the school start time.

Mrs. Larkin noted that insurance is big piece of our budget.
Senator Hwang spoke about the expense of insurance and that they are looking at solutions to minimize the costs. Their proposal is using benchmarking which we've never had. They also asked the pharmaceutical companies to lower costs.

Representative Marty Foncello joined the meeting.
Mr. Ramsey was concerned about the shortage of teachers and asked strategies the State would adopt to assist districts.

Mr. Cruson asked if there was any discussion about providing free lunches into the 2023-2024 school year.
Representative Bolinsky said there were a couple of bills regarding that. Some districts feel it's a necessity and needs to be justified.

Representative Foncello noted that his wife is a teacher and was an administrator. He also taught at WesConn as an adjunct professor.

Item 5 – Reports (continued)
Financial Report:
Mrs. Vadas spoke about the financial report and transfers.

MOTION: Mrs. Plante moved that the Board of Education approve the financial report and transfers for the month ending January 31, 2023. Mr. Cruson seconded. Motion passes unanimously.

Item 6 – Presentations

First Read of Honors Physics Curriculum:
This curriculum was presented by Kim Lowell and Chris Canfield.

iReady Mid-Year Data Update:
Kara DiBartolo presented this information.

Mr. Ramsey asked if Mrs. DiBartolo accepted the fact that the mastering of the six domains of reading may enhance social and emotional well-being and was it also true that vocabulary enhances the domains of reading. If so, can we incorporate vocabulary to enhance reading?
Mrs. DiBartolo believes social emotional learning and the six domains will be enhanced with vocabulary which enhances comprehension and should be dispersed throughout the day.

Mrs. Plante wasn't sure how to compare us to other districts and was concerned about students who are one grade level behind.
Mrs. DiBartolo said the data is based on where our students are. It's hard to compare with other districts because they don't use the same programs. It's best to compare within our district.

Mrs. Larkin was concerned about fifth grade students and the use of technology for intervention and support.
Mrs. DiBartolo said we have been having that conversation with grade K-8 administrators. We do not want students in front of a computer because that does not replace a teacher. The interventionists work with the teacher and a computer component.

Mrs. Larkin encouraged less use of technology. Regarding action steps, she hopes we move more away from what we are going to do regarding the five to seven years of recovery from COVID and implement quickly.

Mr. Vouros said for the students that have a learning loss what is the game plan for parental involvement to help the teacher focus in on how they get their child where they need to be before the end of the year? Are their parental meetings?

Mrs. DiBartolo said iReady has reports that are sent to parents. Teachers are in constant communication with parents. There may not be the support children need at home so we look at what else we can do for these students.

Mr. Melillo said we are taking the data points to drive instruction. The tools used in the remote world carried over into the classroom. We are working with our teachers and bringing best practice back into the classroom and bringing those discussions into PD and with our interventionists. We have expectations that there is loss of learning but we are seeing a lot of growth in our students.

Mrs. Uberti spoke about our comparison with other districts. iReady implemented a chart and the four Newtown schools were in the upper percentage regarding growth and are performing in the upper quadrant. We feel there are students on track. Teachers feels students are making outstanding growth, particularly in math. Interventions are being used by teachers.

Ms. Zukowski spoke about the two facets of growth performance.
Mrs. Uberti said typical growth is what you expect after a full year. To catch students up may take more than one year.
Ms. Zukowski ask if there was a way to know how much progress we are making.

Mrs. Uberti said learning is not linear. This test is helping us identify how we are catching them up.
Ms. Zukowski asked if there was any way we can get information from the aggregate data regarding interrupted learning.
Mr. Melillo said the goal line changes over time and changes mid-year. Students are learning at an accelerated pace.

Item 7 – Old Business
MOTION: Mrs. Plante moved that the Board of Education approve Policy 4118.12/4218.12 Freedom of Speech and Use of Media Including Social Media. Mr. Cruson seconded. Motion passes unanimously.

MOTION: Mrs. Plante moved that the Board of Education approve Policy 4118.5/4218.5 Acceptable use of Computer Systems and Electronic Communications. Mr. Cruson seconded. Motion passes unanimously.

MOTION: Mrs. Plante moved that the Board of Education rescind Policy 9300 Methods of Operation. Mr. Cruson seconded. Motion passes unanimously.

Transportation Update:
Mrs. Vadas noted that we are fully staffed with two drivers from different towns and two employees who have CDLs who can help. We have nine who started classes in January and will be ready in mid-March. A lot of applications are coming in.

Item 8 – New Business
MOTION: Mrs. Plante moved that the Board of Education approve the minutes of February 7, 2023. Mr. Cruson seconded. Motion passes unanimously.

Item 9 – Public Participation
MOTION: Mr. Cruson moved to adjourn. Mrs. Plante seconded. Motion passes unanimously.

Item 10 – Adjournment
The meeting adjourned at 9:47 p.m.

Respectfully submitted:

_____
Donald Ramsey
Secretary

TO: Chris Melillo, Superintendent
FROM: Suzanne D'Eramo, Director of Human Resources
RE: Superintendent's Report – Staffing Update for **FEBRUARY 2023**
DATE: March 3, 2023

FEBRUARY 2023

CERTIFIED RETIREMENTS:
Maryann Bisson – NMS SPED (effective June 30, 2023)
Kathleen Papp – RIS SPED (effective June 30, 2023)

CERTIFIED RESIGNATIONS:
Debra Howard – NHS SPED (effective June 30, 2023)
Beth Iaciofano – NMS science (effective June 30, 2023)
Richard Kokinchak – NHS SPED (effective June 30, 2023)
Brianne Vazzano – HAW grade 3 (effective June 30, 2023)

CERTIFIED NEW HIRES:
None

CERTIFIED OPEN POSITIONS:
NHS SPED

ADDITIONAL DISTRICT HIRING NOTES:
Here is a recap of all certified/non-certified staff who began working in February:
Paraeducators = 2
Custodian = 1
School Security Officer = 1
Bldg. Subs/LT subs = 2

Of the 6 newly hired employees, 1 indicated a diverse ethnicity or race other than white. This equates to a total of 17% broken down as follows:
Asian = 1

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

ENROLLMENT REPORT AS OF February 28, 2023

	Current Monthly Enrollment				*Cumulative Year-to-Date*			
Grade	Jan(e) 2023	Added	Left	Feb 2023	Sept 6th 2022	Added	Left	Feb 2023
K	236	1	0	237	231	9	3	237
1	294	1	0	295	292	5	2	295
2	281	1	0	282	276	8	2	282
3	277	1	0	278	277	3	2	278
4	286	0	1	285	289	2	6	285
Total Elementary	1,374	4	1	1,377	1,365	27	15	1,377
5	297	0	1	296	292	9	5	296
6	287	0	0	287	284	6	3	287
Total Intermediate	584	0	1	583	576	15	8	583
7	309	1	3	307	311	3	7	307
8	298	0	0	298	295	4	1	298
Total Middle	607	1	3	605	606	7	8	605
9	295	0	1	294	291	7	4	294
10	346	0	0	346	341	9	4	346
11	340	0	0	340	334	6	0	340
12	348	1	0	349	358	3	12	349
Total High	1,329	1	1	1,329	1,324	25	20	1,329
Special Education								
Pre-Kdg	85	1	1	85	75	13	3	85
NCP, RISE, PAL	29	0	1	28	31	0	3	28
Out-of-Town	46	1	1	46	45	4	3	46
Total Enrollment	4,054	8	9	4,053	4,022	91	60	4,053
	=====	===	===	=====	=====	===	===	=====
ENROLLMENT BY SCHOOL								
Hawley	293	0	1	292	286	9	3	292
Sandy Hook	365	3	0	368	364	8	4	368
Middle Gate	390	1	0	391	388	6	3	391
Head O' Meadow	326	0	0	326	327	4	5	326
Total	1,374	4	1	1,377	1,365	27	15	1,377
Reed Intermediate	584	0	1	583	576	15	8	583
Middle School	607	1	3	605	606	7	8	605
High School	1,329	1	1	1,329	1,324	25	20	1,329
Special Education								
Pre-Kdg	85	1	1	85	75	13	3	85
NCP, RISE, PAL	29	0	1	28	31	0	3	28
Out-of-Town	46	1	1	46	45	4	3	46
Total Enrollment	4,054	8	9	4,053	4,022	91	60	4,053
	=====	===	===	=====	=====	===	===	=====

(e) = End Of Month

check	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

ELEMENTARY CLASS SIZES AS OF February 28, 2023

Grade	Hawley	Sandy Hook	Middle Gate	Head O' Meadow	Reed	TOTAL	check
Pre K		85				**85**	0
K							
	13	16	18	16			
	13	16	16	17			
	14	17	15	16			
		16	18	16			
Total K	**40**	**65**	**67**	**65**		**237**	0
1							
	17	16	15	17			
	17	16	18	18			
	18	17	19	19			
	17	17	18				
		18	18				
Total 1	**69**	**84**	**88**	**54**		**295**	0
2							
	20	15	17	18			
	20	17	17	17			
	20	19	14	17			
		18	17	18			
			18				
Total 2	**60**	**69**	**83**	**70**		**282**	0
3							
	21	20	20	19			
	20	19	20	21			
	19	20	20	21			
		18	20				
Total 3	**60**	**77**	**80**	**61**		**278**	0
4							
	20	18	16	17			
	21	17	19	20			
	22	20	19	20			
		18	19	19			
Total 4	**63**	**73**	**73**	**76**		**285**	0
Total K-4	**292**	**368**	**391**	**326**		**1,377**	0
check	*0*	*0*	*0*	*0*		*0*	