02: Fluids

Content Area: **Science**
Course(s): **AP Physics 2**
Time Period: **October**
Length: **1**
Status: **Published**

Enduring Understandings:

- Absolute Pressure includes the atmosphere while gauge pressure does not.
- Bernoulli's principle says that as velocity increases, pressure decreases for a confined fluid.
- Continuity of Flow says that the flow rate is the same in all parts of a confined system
- Density is the concentration of matter in a material and is a defining characteristic of a material.
- Force Buoyancy is caused by a difference in pressure between the top and bottom of an object
- Pascal's Principle says pressure will be transmitted equally to all parts of a confined fluid.
- Pressure is caused by the weight of the fluid above you. Doesn't depend on the shape of the container.

Essential Questions:

- How can we predict is an object will float or sink?
- How do we know the velocity of a fluid for a given set of circumstances?

Lesson Titles:

- Bernoulli's Principle
- Continuity of Flow
- Density of Fluids
- Force Buoyancy
- Hydraullics
- Static Pressure

21st Century Skills and Career Ready Practices:

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

Inter-Disciplinary Connections:

LA.RH.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, qualitatively, as well as in words) in order to address a question or solve a problem.
LA.RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LA.RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
LA.WHST.11-12.1.A	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
LA.WHST.11-12.1.B	Develop claim(s) and counterclaims using sound reasoning and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
LA.WHST.11-12.1.C	Use transitions (e.g., words, phrases, clauses) to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
LA.WHST.11-12.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

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

- Chromebook Activity
- Independent Studies
- Lectures on Density of Fluids, Static Pressure, Hydraulics, Force Buoyancy, Continuity of Flow, Bernoulli's Principle
- Problem Solving
- Science Labs

Modifications

Formative Assessment:

- Anticipatory Set
- Closure
- Quizzes on Density of Fluids, Static Pressure, Hydraulics, Force Buoyancy, Continuity of Flow,

Bernoulli's Principle

- Warm-Up

Summative Assessment:

- Alternate Assessment
- Benchmark assessment on Fluids
- Marking Period Assessment

Alternative Assessments:

Performance tasks
Project-based assignments
Problem-based assignments
Presentations
Reflective pieces
Concept maps
Case-based scenarios
Portfolios

Benchmark Assessments:

Skills-based assessment
Reading response
Writing prompt
Lab practical

Resources & Materials:

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