

# 03\_ Understanding Air

Content Area: **Technology**  
Course(s):  
Time Period: **Full Year**  
Length: **9 Days**  
Status: **Published**

## General Overview, Course Description or Course Philosophy

To understand flight, students must understand the medium in which aircraft operate. This unit will focus on the role air plays in flight, including its behavior as a fluid and the importance of air pressure. Students will also learn why the density of air is important, how it changes, and how to measure it. The concept of density altitude will be introduced.

## OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Objectives, essential questions and enduring understandings are outlined within each unit of study and/or Curricular Calendar.

Units of Study: <https://drive.google.com/drive/folders/11Q8sFu-T8ZX9O-2dZC7LEy8PaMNVtJnX?usp=sharing>

## CONTENT AREA STANDARDS

SCI.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.
SCI.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.
SCI.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.
SCI.HS-PS3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).
TECH.8.1.12.A.2	<p>Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.</p> <p>Engineering design is a complex process in which creativity, content knowledge, research, and analysis are used to address local and global problems. Decisions on trade-offs involve systematic comparisons of all costs and benefits, and final steps that may involve redesigning for optimization.</p>

## RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion

## Standards are Required)

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MA.K-12.2	Reason abstractly and quantitatively.
MA.A-SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
MA.K-12.4	Model with mathematics.
MA.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MA.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
MA.N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
LA.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.
LA.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LA.WHST.9-10.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant sufficient textual and non-textual evidence.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LA.WHST.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
LA.WHST.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.

## STUDENT LEARNING TARGETS

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Student learning targets are outlined within each unit of study and/or Curricular Calendar.

## Declarative Knowledge

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Declarative knowledge is outlined within each unit of study and/or Curricular Calendar.

## Procedural Knowledge

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Procedure knowledge is outlined within each unit of study and/or Curricular Calendar.

## **EVIDENCE OF LEARNING**

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### **Formative Assessments**

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Formative assessments are included and outlined in each unit of study.

### **Summative Assessments**

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Summative assessments are included and outlined in each unit of study.

### **RESOURCES (Instructional, Supplemental, Intervention Materials)**

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Materials and resources are outlined in each unit of study.

### **INTERDISCIPLINARY CONNECTIONS**

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Interdisciplinary connections are outlined in each unit of study.

### **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

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Accommodations & Modifications are outlined in each unit of study.