BUTLER SCHOOL DISTRICT

Grade 11 Physics Curriculum

Authored by:
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Adapted from:
New Jersey Student Learning Standards 2020

Reviewed by:
Dr. Daniel R. Johnson, Superintendent
Margaret Lynch, Supervisor of STEAM

Adopted:
June 2022

Last Updated:
12/23

Butler School District
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Butler, NJ 07405
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VISION

The Butler School District's Science Department's objective is to prepare students to think critically, innovate, communicate, and collaborate in an ever-changing world. The Science curriculum provides students with quality, rigorous instruction to help them become better **problem solvers, troubleshooters, and analytical thinkers**. The rich, educational experience provided within the Butler School District will produce young adults with the foundation and expertise they need for the future. It is the goal to challenge each student to develop and extend scientific proficiency through highest quality science teaching and standard-based assessments that meet the learning needs of each student. Butler Science students will become individuals who persevere in their pursuit of lifelong learning through a culture that appreciates the beauty and usefulness of science.

As a result of a Butler Science education, students will be able to…

- Synthesize scientific skills across disciplines
- Develop into confident scientists
- Learn at their own pace and advance their understanding in a variety of ways
- Collaborate with others and contribute productively and articulately
- Act responsibly and be accountable for actions, in person and online
- Effectively approach, analyze, plan, and apply appropriate strategies for problem solving in ambitious contexts with accommodations for those who need it.
- Persevere through difficult situations and tasks and maintain a growth mindset despite adversity.
- Draw on knowledge from a wide variety of science topics with flexibility to approach the same problem from different perspectives or represent the science in different ways.
- Evaluate situations, draw logical conclusions, and develop, describe and apply solutions.
- Construct and support arguments.
- Evaluate their own reasoning and critique the reasoning of others.
- Assess the reasonableness of a solution with respect to the given construct or problem context.
- Use effective communication to engage in peer collaboration, reflecting on whether or not a solution is viable.
- Create appropriate representations of scientific situations across a variety of mediums. These models will support the student's ability to demonstrate and explain their scientific understanding.
- Use tools to explore and deepen their understanding of science concepts.
- Make effective choices regarding the use of any available tools.

- Make appropriate use of technology as a tool that is constantly changing and evolving.
- Attend to precision in their mathematical calculations and in their communication.
- Calculate accurately and efficiently and express numerical answers with a degree of precision that is appropriate to the given context.
- Develop precision in their use of scientific language.
- Look closely to determine patterns and structures within science.
- Make meaningful connections between their knowledge from previous experiences and the content they are currently exploring.
- Develop deep understandings of scientific concepts such that these understandings become applicable building blocks for future learning.
- Identify patterns in science that can be used to solve problems that are challenging relative to their learning comfort zone.
- Use generalizations to increase the efficiency and manageability of their work.
- Demonstrate growth mindset and grit in effectively approaching ever-rigorous problem solving.
- Apply appropriate strategies with differentiated levels of support.
- Be confident in participating in higher level discussions that will assess and advance the understanding of concepts.
- Learn science through exploring and solving contextual problems

COURSE OVERVIEW

This course provides a systematic introduction to the main principles of physics and emphasizes the development of conceptual understanding, rather than mathematical approach. This one year course includes a laboratory component. This course provides a foundation in physics for students in the life sciences, pre-medicine, and some applied sciences, as well as other fields not directly related to science.

COMPONENTS OF THE COURSE

GOALS

New Jersey Student Learning Standards
New Jersey Department of Education Instructional Units for Science

ASSESSMENT

Student learning will be assessed through a variety of formative, summative, benchmark, and alternative assessments.

SCOPE AND SEQUENCE
(*Pacing Guide*)

Unit of Study	Estimated time
Kinematics & Dynamics	9 weeks
Circular Motion, Work, & Momentum	9 weeks
Fluids, Heat, and Waves	9 weeks
Electricity & Circuits	9 weeks

AFFIRMATIVE ACTION COMPLIANCE STATEMENT

The Butler Public Schools are committed to the achievement of increased cultural awareness, respect, and equity amongst our students, teachers, and community. We are pleased to present all pupils with information pertaining to possible career, professional, or vocational opportunities which in no way restricts or limits options on the basis of race, color, creed, religion, sex, ancestry, national origin, or socioeconomic status.

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Students with IEPs, 504s, and/or Students at Risk of Failure Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided through conferences and small groups. The teacher utilizes visual and multi-sensory methods of instruction in addition to assistive technology when needed. Students are provided with graphic organizers and other scaffolded material. Modification of content and product may be deemed

necessary based on student needs. Students are provided with testing accommodations and authentic assessments.

Gifted & Talented Students Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided to the student through conferences and small groups. Students are engaged through inquiry-based instruction to develop higher-order thinking skills. Activities are developed based on student interests and student goals. Students engage in real-world projects and scenarios.

English Language Learners Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided to students through conferences and small groups. Students are pre-taught vocabulary terms and concepts. Teachers engage students through visual learning, including the use of graphic organizers. Teachers use cognates to increase comprehension. The teacher models tasks and concepts, and pairs students learning English with students who have more advanced English language skills. Scaffolding is provided including word walls, sentence frames, think-pair-share, cooperative learning groups, and teacher think-alouds.

21ST CENTURY THEMES & SKILLS

Embedded in many of our units of study and problem based learning projects are the 21st Century Themes as prescribed by the New Jersey Department of Education. These themes are as follows:

- Global Awareness
- Financial, Economic, Business, and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy

CURRICULUM ADDENDA FOR SPECIAL EDUCATION

This curriculum can be both grade and age appropriate for special education students and serves as a guide for the special education teacher in line with the district's written philosophy of special education, as stated within Policy #6700 concerning Programs for Educationally Disabled Students. Based on the Child Study Team evaluation and consultation with the parent and classroom teacher, an individualized education plan may include modifications to content, instructional procedures, student expectations, and targeted achievement outcomes of this curriculum document in accordance with the identified needs of an eligible student. This educational plan will then become a supplement guide that the classroom teacher, parent, and Child Study Team will use to measure the individual student's performance and achievement.

CURRICULUM ADDENDA FOR ENGLISH LANGUAGE LEARNERS

This curriculum guide is appropriate and is implemented for all students according to age and grade, and is in line with the district's written philosophy of English language acquisition concerning Bilingual Instruction and English as a Second Language Programs. In accordance with the New Jersey

Administrative Code 6A:15, the contents herein provide equitable instructional opportunities for English Language Learners to meet the New Jersey Student Learning Standards and to participate in all academic and non-academic courses. Students enrolled in a Bilingual and/or an ESL program may, in consultation with the classroom teacher and Bilingual and/or ESL teacher, receive modification to content, instructional procedures, student expectations and targeted achievement outcomes of this curriculum document in accordance with the students developmental and linguistic needs.

DIVERSITY AND INCLUSION

In alignment with the 2020 NJSLS, the Science Curriculum materials will:

Cultivate respect towards minority groups to foster appreciation of their differences as well as their contributions to the advancement of science

Analyze and appreciate the diverse contributions made in the past (scientifically, economically, politically, and socially) at both the state and federal level as exemplified through science

Examine grade-level texts and resources that simultaneously highlight science as well as the contributions made to it by those of different genders, ethnicities, and abilities.

Employ science as a means of communication — whether in regard to empathy, inclusivity, or advocacy — in an effort to creatively inspire solutions for those with specific needs.

Engage in authentic learning experiences that motivate the acquisition and application of varied perspectives in science

Facilitate the ability to communicate effectively through science while applying content knowledge, interdisciplinary connections, and thinking skills to do so.

Foster active student participation in an inclusive culture that honors scientists of all genders, ethnicities, and abilities.

Analyze and develop an understanding of how scientific, economic, political, social, and cultural aspects of society influence new technological and scientific processes.

Reflect on both personal and non-personal experiences aimed to promote empathy and inclusivity for all regardless of our differences.

UNIT 1

Kinematics & Dynamics

UNIT SUMMARY

- Define kinematics of linear motion.
- Apply Newton's laws to various physical situations

NEW JERSEY STUDENT LEARNING STANDARDS SCIENCE

- **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-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).
- **HS-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- **HS-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **HS-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
- **HS-ETS1-4.** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
- **HS-PS3-5** Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.

INTERDISCIPLINARY CONNECTIONS

New Jersey Student Learning Standards-Language Arts (2023)

L.VL.11–12.3. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, including technical meanings, choosing flexibly from a range of strategies.

RI.MF.11–12.6. Synthesize complex information across multiple sources and formats to develop ideas, resolve conflicting information, or develop an interpretation that goes beyond explicit text information (e.g., express a personal point of view, new interpretation of the concept).

W.WR.11–12.5. 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.

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

SL.II.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.

SL.PI.11–12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.

SL.UM.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.

New Jersey Student Learning Standards for Mathematics:
MP.2 Reason abstractly and quantitatively.
MP.4 Model with mathematics
HSN-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.
HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.
HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition
9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving
9.4.12.CT.4: Participate in online strategy and planning sessions for course-based, school-based, or other project and determine the strategies that contribute to effective outcomes.
9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions
9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience
9.4.12.IML.6: Use various types of media to produce and store information on climate change for different purposes and audiences with sensitivity to cultural, gender, and age diversity
9.4.12.IML.8: Evaluate media sources for point of view, bias, and motivations
9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem

New Jersey Student Learning Standards for Computer Science and Design thinking:

8.1.12.IC.3: Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources.
8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system
8.2.12.ITH.1: Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints
8.2.12.ETW.1: Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation, and maintenance of a chosen product
8.2.12.ETW.3: Identify a complex, global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution.
8.2.12.EC.1: Analyze controversial technological issues and determine the degree to which individuals, businesses, and governments have an ethical role in decisions that are made. •
8.2.12.EC.2: Assess the positive and negative impacts of emerging technologies on developing countries and evaluate how individuals, non-profit organizations, and governments have responded. •
8.2.12.EC.3: Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience. •
8.2.12.ETW.4: Research historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product and present the competing viewpoints.

21st CENTURY LIFE AND CAREER STANDARDS

Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success.

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

9.1: Personal Financial Literacy A. Financial Institutions B. Financial Psychology C. Planning and Budgeting D. Risk Management and Insurance E. Civic Financial Responsibility F. Credit Profile G. Economic and Government Influences H. Credit and Debt Management	**9.2: Career Awareness, Exploration & Preparation, and Training** A. Career Awareness (K-2) B. Career Awareness and Planning (3-5) C. Career Awareness and Planning (6-8) D. Career Awareness and Planning (9-12) **9.4 Life Literacies and Key Skills** A. Creativity and Innovation B Critical Thinking and Problem-solving C. Digital Citizenship D. Global and Cultural Awareness E. Information and Media Literacy F. Technology Literacy	**9.3: Career and Technical Education** A. Agriculture B. Architecture C. Arts,A/V, Technology D. Business Management E. Education F. Finance G. Government H. Health Science I. Hospital & Tourism J. Human Services K. Information Tech. L. Law and Public Safety M. Manufacturing N. Marketing O. Science, Technology, Engineering & Math P. Trans./Logistics

TECHNOLOGY STANDARDS	
8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming	**8.2 Design Thinking** A. Engineering Design B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
● Much of science deals with constructing explanations of how things change and how they remain stable. (HS-PS1-6) ● Connections to Nature of Science Scientific Knowledge Assumes an	● What are Kinematics and Dynamics and how do they differ? ● How can we both describe and predict the motion of objects?

Order and Consistency in Natural Systems Science assumes the universe is a vast single system in which basic laws are consistent. (HS-PS1-7) ● Newton's second law accurately predicts changes in the motion of macroscopic objects. (HS-PS2-1)	● Why do objects accelerate, and how can we predict the acceleration of objects?

STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

- To define displacement, velocity, and acceleration and their mathematical applications.
- To apply Newton's laws of motion to a variety of static and dynamic situations.

SUGGESTED ACTIVITIES

- Motion labs to measure displacement, velocity, and acceleration
- Dynamics labs to measure forces, mass, and acceleration
- Kinematics and forces worksheets
- Computer simulations (PhET, physicsclassroom, etc.) for both kinematics and dynamics
- YouTube videos illustrating kinematics and dynamics concepts
- Hands-on projects to explore real-life applications of kinematics and dynamics
- Current events; contributions from other countries **DEI**
- Discussion of prosthetic limbs and the forces applied to the human body upon use of the prosthesis**. DEI**
- Discussion of Isaac Newton's life. Newton's writings as well as the writings of those who interacted with him suggest he was autistic and bipolar .**DEI**

EVIDENCE OF LEARNING

Formative Assessments:	**Summative Assessment:**
Classroom Discussion Exit Slip Checklists Peer Assessment Vocabulary Quizzes Rubrics Participation and teacher observation Mini Whiteboard Responses Think-Pair-Share Concept Map Classroom Poll	Unit Tests End-of-Book Test NJSLA Test

Labs	
Benchmark Assessment: Teacher created Assessments Unit Benchmarks	**Alternative Assessments:** Project Portfolio

INSTRUCTIONAL RESOURCES

Core Instructional Resource:	**Teacher Created Materials:**	**Supplemental Resources:**
Textbook	Unit worksheet Mini-labs Unit labs Projects Assessments	PhET simulations Physicsclassroom.com NJCTL YouTube videos

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Special Education:
Provide modified notes and access to extra copies online
Provide oral reminders and check student work during independent work time
Model skills/techniques to be mastered
Check and sign assignment planner
Preferential seating
Pair visual prompts with verbal presentations
Modified or scaffolded homework and classwork
Extended time as needed
Provide graphic organizers and study guides

English Learners:
Provide scaffolded assignments and assessments
Pair visual prompts with visual presentations
Check and sign assignment planner
Native Language translation (peer, online assistive technology, translation device, bilingual dictionary)
Extended time for assignment and assessment as needed
Highlight key vocabulary
Use graphic organizers
Provide verbal and written directions
Preferential seating with a English-speaking peer

At Risk of Failure:

Check and sign assignment planner
Encourage class participation and reinforce skills
Model skills and assignments
Extended to time to complete class work
Preferential seating
Provide extra help outside of class and 1:1 instruction when needed
Communicate regularly with students' other teachers
Provide positive feedback for tasks well done
Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:
Pose higher-level thinking questions
Provide higher level reading and writing materials for literacy based activities
Probe student to extend thinking beyond the text or connect two or more texts
Provide alternate or project-based assessments and assignments

Students with 504 Plans
Provide extended time as needed
Modify length of writing assignment
Provide short breaks within the lesson
Provide scaffolding for students
Utilize graphic organizers

UNIT 2
Circular Motion, Work & Energy, & Momentum
UNIT SUMMARY
● Define elements of circular motion ● Convert between work and the different forms of energy ● Predict the results of collisions
NEW JERSEY STUDENT LEARNING STANDARDS SCIENCE
● 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-PS2-2 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-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-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.
- 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.

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CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

9.1: Personal Financial Literacy	**9.2: Career Awareness, Exploration & Preparation, and Training**	**9.3: Career and Technical Education**
A. Civic Responsibility B. Financial Institutions C. Financial Psychology D. Planning and Budgeting E. Risk Management and Insurance F. Civic Financial Responsibility G. Credit Profile H. Economic and Government Influences I. Credit and Debt Management	A. Career Awareness (K-2) B. Career Awareness and Planning (3-5) C. Career Awareness and Planning (6-8) D. Career Awareness and Planning (9-12) **9.4 Life Literacies and Key Skills** A. Creativity and Innovation B Critical Thinking and	A. Agriculture B. Architecture C. Arts,A/V, Technology D. Business Management E. Education F. Finance G. Government H. Health Science I. Hospital & Tourism J. Human Services K. Information Tech. L. Law and Public Safety M. Manufacturing N. Marketing

	Problem-solving C. Digital Citizenship D. Global and Cultural Awareness E. Information and Media Literacy F. Technology Literacy	O. Science, Technology, Engineering & Math P. Trans./Logistics

TECHNOLOGY STANDARDS	
8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming	**8.2 Design Thinking** A. Engineering Design B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture

ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
● The total amount of energy and matter in closed systems is conserved. (HS-PS1-7) ● Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system. (HS-PS1-4) ● Momentum is defined for a particular frame of reference; it is the mass times the velocity of the object. (HS-PS2-2) ● If a system interacts with objects outside itself, the total momentum of the system can change; however, any such change is balanced by changes in the momentum of objects outside the system. (HS-PS2-2), (HS-PS2-3) ● Newton's law of universal gravitation and Coulomb's law provide the mathematical models to describe and predict the effects of gravitational and electrostatic forces between distant objects. (HS-PS2-4)	● What are the differences between linear and rotational dynamics? ● How can the motion of an object in circular motion be both described & predicted? ● How can work and energy be interconverted? ● How can the momentum of an object be both described and predicted? ● What happens when objects collide?

• Mathematical expressions, which quantify how the stored energy in a system depends on its configuration (e.g. relative positions of charged particles, compression of a spring) and how kinetic energy depends on mass and speed, allow the concept of conservation of energy to be used to predict and describe system behavior. (HS-PS3-1) • Although energy cannot be destroyed, it can be converted to less useful forms—for example, to thermal energy in the surrounding environment. (HS-PS3-3), (HS-PS3-4)	

STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

- To predict the velocities of objects in circular motion and the forces acting on them
- To describe situations that involve the conservation of energy
- To convert between work and the different forms of energy
- To predict the results of collisions using the conservation of momentum

SUGGESTED ACTIVITIES

- Circular motion labs to measure velocity, centripetal acceleration & forces
- Work & energy labs to measure conversions between different forms of energy
- Momentum labs to measure the results of collisions between objects
- Circular Motion, Work & Energy, and Momentum worksheets
- Computer simulations (PhET, physicsclassroom, etc.) for Circular Motion, Work & Energy, and Momentum
- YouTube videos illustrating Circular Motion, Work & Energy, and Momentum concepts
- Hands-on projects to explore real-life applications of Circular Motion, Work & Energy, and Momentum
- Current events; contributions from other countries (DEI)
- Climate energy project https://www.pbs.org/wgbh/nova/labs/lab/energy/ **Climate**
- Discuss the influence of NASA and astronauts within the field of astronomy **LGBTQ+**

- Highlight film of Brian Boitano, gay figure skater, completing a spin. Footage of Greg Louganis, Olympic diver and LGBT activist, completing a high dive. The twists performed by divers and the spins performed by figure skaters are possible because the athletes change their moment of inertia. **LGBTQ+**

EVIDENCE OF LEARNING

Formative Assessments:	**Summative Assessment:**
Classroom Discussion Exit Slip Checklists Peer Assessment Vocabulary Quizzes Rubrics Participation and teacher observation Mini Whiteboard Responses Think-Pair-Share Concept Map Classroom Poll	Unit Tests End-of-Book Test NJSLA Test
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks	**Alternative Assessments:** Project Portfolio

INSTRUCTIONAL RESOURCES

Core Instructional Resource:	**Teacher Created Materials:**	**Supplemental Resources:**
Textbook	Unit worksheet Mini-labs Unit labs Projects Assessments	PhET simulations Physicsclassroom.com NJCTL YouTube videos

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Special Education:
Provide modified notes and access to extra copies online
Provide oral reminders and check student work during independent work time
Model skills/techniques to be mastered
Check and sign assignment planner

Preferential seating
Pair visual prompts with verbal presentations
Modified or scaffolded homework and classwork
Extended time as needed
Provide graphic organizers and study guides

English Learners:
Provide scaffolded assignments and assessments
Pair visual prompts with visual presentations
Check and sign assignment planner
Native Language translation (peer, online assistive technology, translation device, bilingual dictionary)
Extended time for assignment and assessment as needed
Highlight key vocabulary
Use graphic organizers
Provide verbal and written directions
Preferential seating with a English-speaking peer

At Risk of Failure:
Check and sign assignment planner
Encourage class participation and reinforce skills
Model skills and assignments
Extended to time to complete class work
Preferential seating
Provide extra help outside of class and 1:1 instruction when needed
Communicate regularly with students' other teachers
Provide positive feedback for tasks well done
Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:
Pose higher-level thinking questions
Provide higher level reading and writing materials for literacy based activities
Probe student to extend thinking beyond the text or connect two or more texts
Provide alternate or project-based assessments and assignments

Students with 504 Plans
Provide extended time as needed
Modify length of writing assignment
Provide short breaks within the lesson
Provide scaffolding for students
Utilize graphic organizers

UNIT 3

Fluids, Heat, and Waves

UNIT SUMMARY

The Learner Will Be Able To:

- Be able to define methods of heat transfer and mathematical computations.
- Be able to define the phases of matter and mathematical calculations.
- Be able to define the properties of sound energy and mathematical explanations.

NEW JERSEY STUDENT LEARNING STANDARDS SCIENCE

- HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
- 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.
- 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).
- 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.
- HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).
- 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-PS4-3 Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.
- 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.
- **HS-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- **HS-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

- **HS-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
- **HS-ETS1-4.** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

INTERDISCIPLINARY CONNECTIONS

New Jersey Student Learning Standards-Language Arts (2023)

L.VL.11–12.3. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, including technical meanings, choosing flexibly from a range of strategies.

RI.MF.11–12.6. Synthesize complex information across multiple sources and formats to develop ideas, resolve conflicting information, or develop an interpretation that goes beyond explicit text information (e.g., express a personal point of view, new interpretation of the concept).

W.WR.11–12.5. 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.

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

SL.II.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.

SL.PI.11–12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.

SL.UM.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.

New Jersey Student Learning Standards for Mathematics:
MP.2 Reason abstractly and quantitatively.
MP.4 Model with mathematics
HSN-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.
HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.
HSA-SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition
9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving
9.4.12.CT.4: Participate in online strategy and planning sessions for course-based, school-based, or other project and determine the strategies that contribute to effective outcomes.
9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions
9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience
9.4.12.IML.6: Use various types of media to produce and store information on climate change for different purposes and audiences with sensitivity to cultural, gender, and age diversity
9.4.12.IML.8: Evaluate media sources for point of view, bias, and motivations
9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem

New Jersey Student Learning Standards for Computer Science and Design thinking:

8.1.12.IC.3: Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources.
8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system
8.2.12.ITH.1: Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints
8.2.12.ETW.1: Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation, and maintenance of a chosen product
8.2.12.ETW.3: Identify a complex, global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution.
8.2.12.EC.1: Analyze controversial technological issues and determine the degree to which individuals, businesses, and governments have an ethical role in decisions that are made. •
8.2.12.EC.2: Assess the positive and negative impacts of emerging technologies on developing countries and evaluate how individuals, non-profit organizations, and governments have responded. •

8.2.12.EC.3: Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience. •
8.2.12.ETW.4: Research historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product and present the competing viewpoints.

21st CENTURY LIFE AND CAREER STANDARDS

Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success.

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

9.1: Personal Financial Literacy	**9.2: Career Awareness, Exploration & Preparation, and Training**	**9.3: Career and Technical Education**
I. Financial Institutions	G. Career Awareness (K-2)	Q. Agriculture
J. Financial Psychology	H. Career Awareness and Planning (3-5)	R. Architecture
K. Planning and Budgeting	I. Career Awareness and Planning (6-8)	S. Arts,A/V, Technology
L. Risk Management and Insurance	J. Career Awareness and Planning (9-12)	T. Business Management
M. Civic Financial Responsibility		U. Education
N. Credit Profile		V. Finance
O. Economic and Government Influences	**9.4 Life Literacies and Key Skills**	W. Government
P. Credit and Debt Management	A. Creativity and Innovation	X. Health Science
	B Critical Thinking and	Y. Hospital & Tourism
		Z. Human Services
		AA. Information Tech.
		BB. Law and Public Safety
		CC. Manufacturing
		DD. Marketing

	Problem-solving C. Digital Citizenship D. Global and Cultural Awareness K. Information and Media Literacy L. Technology Literacy	EE. Science, Technology, Engineering & Math FF. Trans./Logistics

TECHNOLOGY STANDARDS	
8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming	**8.2 Design Thinking** A. Engineering Design B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
● The wavelength and frequency of a wave are related to one another by the speed of travel of the wave, which depends on the type of wave and the medium through which it is passing. (HS-PS4-1) ● Waves can add or cancel one another as they cross, depending on their relative phase (i.e., relative position of peaks and troughs of the waves), but they emerge unaffected by each other. (Boundary: The discussion at this grade level is qualitative only; it can be based on the fact that two different sounds can pass a location in different directions without getting mixed up.) (HS-PS4-3) ● Electromagnetic radiation (e.g., radio, microwaves, light) can be modeled as a wave of changing electric and magnetic fields or as particles called photons. The wave model is useful for explaining many features of electromagnetic	● How do heat and sound energy travel? ● How do waves interact with each other? ● How do objects lose and gain heat energy? ● What factors influence fluid flow?

radiation, and the particle model explains other features. (HS-PS4-3) ● When light or longer wavelength electromagnetic radiation is absorbed in matter, it is generally converted into thermal energy (heat). Shorter wavelength electromagnetic radiation (ultraviolet, X-rays, gamma rays) can ionize atoms and cause damage to living cells. (HS-PS4-4) ● Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms. (HS-PS3-1), (HS-PS3-2) ● At the macroscopic scale, energy manifests itself in multiple ways, such as in motion, sound, light, and thermal energy. (HS-PS3-2) (HS-PS3-3) ● These relationships are better understood at the microscopic scale, at which all of the different manifestations of energy can be modeled as a combination of energy associated with the motion of particles and energy associated with the configuration (relative position of the particles). In some cases the relative position energy can be thought of as stored in fields (which mediate interactions between particles). This last concept includes radiation, a phenomenon in which energy	

stored in fields moves across space. (HS-PS3-2) ● Conservation of energy means that the total change of energy in any system is always equal to the total energy transferred into or out of the system. (HS-PS3-1) ● Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems. (HSPS3-1), (HS-PS3-4)	

STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

- To describe the factors that influence fluid flow
- To describe the factors that influence heat flow
- To outline the properties of waves and how they interact
- To predict the quality of sound waves from their basic properties

SUGGESTED ACTIVITIES

- Fluids labs to measure fluid flow under different conditions
- Heat labs to measure heat flow under different conditions
- Waves labs to measure the formation & interaction of sound waves
- Fluids, Heat, and Sound Wave worksheets
- Computer simulations (PhET, physicsclassroom, etc.) for Fluids, Heat, and Sound Wave
- YouTube videos illustrating Fluids, Heat, and Sound Wave concepts
- Projects to explore real-life applications of Fluids, Heat, and Sound Wave
- Current events; contributions from other countries **DEI**
- Discussion of nanomaterials and the work of David K. Smith, known as one of the most visible out gay scientists. Many nanomaterials vibrate with periodic motion. **LGBTQ+**
- Choose a famous experiment, which was conducted in the early 1800s through 1960, and explain the experiment, what led the research team to conduct the experiment, how the experiment was conducted, the results, and the implication to life today due to the result or information gained. (e.g. Michelson-Morley, Photoelectric Effect, DNA and x-rays) **DEI**
- Scientists and engineers from different countries are designing ways to clean and distribute water. **DEI/Climate**
- List the processes involved in gathering evidence for past and present climate change (HS-ESS2-4, HS-ESS3-4, HS-ESS3-5, HS-ESS3-6).**Climate**

- Describe the human behaviors and natural conditions that influence climate change. (HS-ESS2-4, HS-ESS3-4, HS-ESS3-5, HS-ESS3-6).**Climate**
- Discussion of the Earth's rotation, creation of seasons and tides, the changing of the seasons due to climate change**. Climate**

EVIDENCE OF LEARNING

Formative Assessments:	**Summative Assessment:**
Classroom Discussion Exit Slip Checklists Peer Assessment Vocabulary Quizzes Rubrics Participation and teacher observation Mini Whiteboard Responses Think-Pair-Share Concept Map Classroom Poll Labs	Unit Tests End-of-Book Test NJSLA Test
Benchmark Assessment: Teacher created Assessments Unit Benchmarks	**Alternative Assessments:** Project Portfolio

INSTRUCTIONAL RESOURCES

Core Instructional Resource:	**Teacher Created Materials:**	**Supplemental Resources:**
Textbook	Unit worksheet Mini-labs Unit labs Projects Assessments	PhET simulations Physicsclassroom.com NJCTL YouTube videos

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Special Education:
Provide modified notes and access to extra copies online
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Model skills/techniques to be mastered
Check and sign assignment planner

Preferential seating
Pair visual prompts with verbal presentations
Modified or scaffolded homework and classwork
Extended time as needed
Provide graphic organizers and study guides

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Native Language translation (peer, online assistive technology, translation device, bilingual dictionary)
Extended time for assignment and assessment as needed
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Provide verbal and written directions
Preferential seating with a English-speaking peer

At Risk of Failure:
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Encourage class participation and reinforce skills
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Communicate regularly with students' other teachers
Provide positive feedback for tasks well done
Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:
Pose higher-level thinking questions
Provide higher level reading and writing materials for literacy based activities
Probe student to extend thinking beyond the text or connect two or more texts
Provide alternate or project-based assessments and assignments

Students with 504 Plans
Provide extended time as needed
Modify length of writing assignment
Provide short breaks within the lesson
Provide scaffolding for students
Utilize graphic organizers

UNIT 4

Electricity and Circuits

UNIT SUMMARY

The Learner Will Be Able To:

- Be able to define static electricity and its origins, including Coulomb's law equation.
- Be able to define electric current as the movement of free electrons in a conductor.
- Be able to define Volts, Amps, Ohms' Law.
- Be able to define and manipulate DC circuits

NEW JERSEY STUDENT LEARNING STANDARDS SCIENCE

- 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.
- 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.
- HS-PS4-2 Evaluate questions about the advantages of using a digital transmission and storage of information.
- **HS-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- **HS-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **HS-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
- **HS-ETS1-4.** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

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students. They are practices that have been linked to increase college, career, and life success.

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CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

9.1: Personal Financial Literacy

J. Civic Responsibility
K. Financial Institutions
L. Financial Psychology
M. Planning and Budgeting
N. Risk Management and Insurance
O. Civic Financial Responsibility
P. Credit Profile
Q. Economic and Government Influences
R. Credit and Debt Management

9.2: Career Awareness, Exploration & Preparation, and Training

G. Career Awareness (K-2)
H. Career Awareness and Planning (3-5)
I. Career Awareness and Planning (6-8)
J. Career Awareness and Planning (9-12)

9.4 Life Literacies and Key Skills

A. Creativity and Innovation
B Critical Thinking and Problem-solving
C. Digital Citizenship
D. Global and Cultural Awareness
K. Information and Media Literacy
L. Technology Literacy

9.3: Career and Technical Education

Q. Agriculture
R. Architecture
S. Arts,A/V, Technology
T. Business Management
U. Education
V. Finance
W. Government
X. Health Science
Y. Hospital & Tourism
Z. Human Services
AA. Information Tech.
BB. Law and Public Safety
CC. Manufacturing
DD. Marketing
EE. Science, Technology, Engineering & Math
FF. Trans./Logistics

TECHNOLOGY STANDARDS

8.1: Computer Science
A. Computing systems

8.2 Design Thinking
A. Engineering Design

B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming	B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
● The structure and interactions of matter at the bulk scale are determined by electrical forces within and between atoms. (HSPS1-3) ● Attraction and repulsion between electric charges at the atomic scale explain the structure, properties, and transformations of matter, as well as the contact forces between material objects. (secondary to HSPS1-1), (secondary to HS-PS1-3) ● Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields. (HSPS2-4), (HS-PS2-5) ● Attraction and repulsion between electric charges at the atomic scale explain the structure, properties, and transformations of matter, as well as the contact forces between material objects. (HS-PS2-6), (secondary to HS-PS1-1), (secondary to HS-PS1-3) ● “Electrical energy” may mean energy stored in a battery or energy transmitted by electric currents. (secondary to HS-PS2-5)	● What is charge and how do charges interact? ● What is electricity? ● How can we predict current flow in circuits?
STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)	
● To describe a charge and predict the interactions between charges	

- To predict the flow of electric current in circuits
- To make connections between energy and electrical charge

SUGGESTED ACTIVITIES

- Electrostatic labs to measure the formation and interaction of static charges
- Circuit labs to measure heat flow under different conditions
- Electrostatics and Circuits worksheets
- Computer simulations (PhET, physicsclassroom, etc.) for Electrostatics and Circuits
- YouTube videos illustrating Electrostatics and Circuits concepts
- Hands-on projects to explore real-life applications of Electrostatics and Circuits
- Climate Change Activity
- Current events; contributions from other countries **DEI**

EVIDENCE OF LEARNING

Formative Assessments:	**Summative Assessment:**
Classroom Discussion Exit Slip Checklists Peer Assessment Vocabulary Quizzes Rubrics Participation and teacher observation Mini Whiteboard Responses Think-Pair-Share Concept Map Classroom Poll	Unit Tests End-of-Book Test NJSLA Test
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks	**Alternative Assessments:** Project Portfolio

INSTRUCTIONAL RESOURCES

Core Instructional Resource:	**Teacher Created Materials:**	**Supplemental Resources:**
Textbook	Unit worksheet Mini-labs Unit labs Projects Assessments	PhET simulations Physicsclassroom.com NJCTL YouTube videos

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Special Education:
Provide modified notes and access to extra copies online
Provide oral reminders and check student work during independent work time
Model skills/techniques to be mastered
Check and sign assignment planner
Preferential seating
Pair visual prompts with verbal presentations
Modified or scaffolded homework and classwork
Extended time as needed
Provide graphic organizers and study guides

English Learners:
Provide scaffolded assignments and assessments
Pair visual prompts with visual presentations
Check and sign assignment planner
Native Language translation (peer, online assistive technology, translation device, bilingual dictionary)
Extended time for assignment and assessment as needed
Highlight key vocabulary
Use graphic organizers
Provide verbal and written directions
Preferential seating with a English-speaking peer

At Risk of Failure:
Check and sign assignment planner
Encourage class participation and reinforce skills
Model skills and assignments
Extended to time to complete class work
Preferential seating
Provide extra help outside of class and 1:1 instruction when needed
Communicate regularly with students' other teachers
Provide positive feedback for tasks well done
Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:
Pose higher-level thinking questions
Provide higher level reading and writing materials for literacy based activities
Probe student to extend thinking beyond the text or connect two or more texts
Provide alternate or project-based assessments and assignments

Students with 504 Plans

Provide extended time as needed
Modify length of writing assignment
Provide short breaks within the lesson
Provide scaffolding for students
Utilize graphic organizers