Fair Lawn

Public Schools

Fair Lawn, NJ

Astronomy

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Astronomy is a high school science class developed by the Fair Lawn Schools high school science faculty and aligned to the NJSLS-S and correlated to the NJSLS-ELA and Math.

Science Department

Fair Lawn School District

Committee Credits

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Astronomy

I. Course Synopsis

STUDENT OUTCOMES AND OBJECTIVES

ASTRONOMY 450

At the completion of this course, participating students will be able to demonstrate:

1. A working knowledge of the basic vocabulary of Astronomy
2. An understanding of the motions of the earth and other planets
3. An understanding of the Universal Laws of Gravitations and its effects on objects in space and their satellites
4. A knowledge of the workings and structure of simple telescope
5. A knowledge of the basic principles of the nature and behavior of light
6. A basic knowledge of the modern theories concerning the development of stars
7. An understanding of the theories concerning the development of stars
8. A knowledge of the theories associated with the origin of the solar system
9. An understanding of the relationship between time and distance
10. A basic understanding of how the variability of light from a star is used to measure and analyze information about that star
11. An understanding of the Milky Way as a separate and distance galaxy in a universe of many galaxies
12. A knowledge of the modern concepts of atomic structure and how it relates to astronomical observations
13. A familiarity with the theories associated with eventual death of stars and the states of matter following a star's collapse
14. A general understanding of the structure of the universe in accordance with present day observations
15. A knowledge of the major theories that deal with the origin and evolution of the universe

This course will be taught in a manner which promotes inquiry-based investigations to study the dynamic nature of space and the bodies in space. NJCCCS 5.1.12 A-D will be incorporated throughout the course.

II. Philosophy & Rationale

This course has been aligned to and developed with the NJSLS-S (NJSLS-S) as its focus. Efforts have been made to integrate aspects of other science standards, particularly the earth and space science standards into this course to assure that students are provided an opportunity to form connections.

All NJSLS-S aligned courses in the Fair Lawn Schools demonstrate a commitment preparing students to become college and career ready as well as the other guiding assumptions of the Frameworks for Science Education (NRC, 2011) and the NJSLS-S including

- Students are born investigators;
- Science instruction should focus on core ideas and practices;
- An understanding of science develops over time;
- Science and engineering require both knowledge and practice;
- Science education must connect to students' interests and experiences; and
- Promoting equity for all students must be a focus of science education.

Additionally, all NJSLS-S aligned courses in the Fair Law Schools integrate the three dimensions discussed in the Frameworks for Science Education and the NJSLS-S, including

- Science & Engineering Practices which describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems; (NJSLS-S PDF)
- Cross Cutting Concepts which link all domains of science and provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically-based view of the world; (NJSLS-S PDF) and
- Disciplinary Core Ideas which focus and unite K-12 science, have a broad importance across multiple sciences or engineering disciplines or are a key organizing concept within

a single discipline; provide a key tool for understanding or investigating more complex ideas and solving problems; relate to the interests and life experiences of students; are connected to societal or personal concerns that require scientific or technological knowledge; and are teachable and learnable over multiple grades at increasing depth and sophistication. (NJSLS-S PDF)

Since coherence is a main dimension of the NJSLS-S, consider reviewing the "story line" for the middle school physical science, life science, earth and space science, and engineering, technology and applications of science, as well as the high school physical science, life science, earth and space science, and engineering, technology and application of science for a full picture of the NJSLS-S philosophy. For a full picture of how these programs are implemented in the Fair Lawn Schools, visit the district curriculum website.

As described in the NJSLS-S, technical writing and reading non-fiction is also a focus of our 6-12 science curricula as required by the NJSLS. Students are expected to think critically about data they collect or read about and then express their thoughts through text-based narratives, journal entries, short-constructed response, argument-based writing, and/or in-class discussion.

Differentiated instruction for students at different levels of achievement and specific learning needs (e.g. special education, English Language Learners (ELL), at-risk, and Gifted & Talented) is embedded in targeted scaffolding based on knowledge of each student's interests, needs, and assessment data, including, but not limited to, in class formative and summative assessments.

When deemed appropriate, department teachers will engage students in purposeful paired discussions to share information more effectively, such as the "turn and talk" (Harvey & Daniels, 2009). "Text annotation" could be used, for example to optimize reading comprehension (Daniels & Steineke, 2010).

III. Scope & Sequence

UNIT 1: Laws of Planetary Motion (4 weeks)

1. The Motion of the Planets
2. The Birth of Modern Astronomy
3. The Laws of Planetary Motion
4. Newton's Laws

UNIT 2: Light and Matter (4 weeks)

1. Information from the Skies
2. Waves in What?
3. The Electromagnetic Spectrum
4. Thermal Radiation
5. Spectroscopy
6. The Formation of Spectral Lines
7. The Doppler Effect

UNIT 3: Observational Technologies (4 weeks)

1. Optical Telescopes
2. Telescope Size
    a. Aperture
    b. Array
3. High-Resolution Astronomy
4. Radio Astronomy
5. Other Astronomies

UNIT 4: The Solar System (4 weeks)

1. An Inventory of the Solar System
2. Interplanetary Matter
    a. Asteroids
    b. Comets
3. The Formation of the Solar System
4. Planets Beyond the Solar System

UNIT 5: The Earth and Moon (4 weeks)

1. Earth and the Moon Relationship
2. The Tides
3. Atmospheres
4. Interiors
5. Surface Activity on Earth
6. The Surface of the Moon
7. Magnetospheres
8. History of the Earth-Moon System

UNIT 6: The Terrestrial Planets (2 weeks)

1. Orbital and Physical Properties
2. Rotation Rates
3. Atmospheres
    a. Composition
    b. Pressure
4. The Surface of Mercury
5. The Surface of Venus
6. The Surface of Mars
7. Internal Structure and Geological History
8. Atmospheric Evolution on Earth, Venus, and Mars

UNIT 7: The Jovian Planets (2 weeks)

1. Observations of Jupiter and Saturn
2. The Discoveries of Uranus and Neptune
3. Bulk Properties of the Outer Jovian Planets
4. Jupiter's Atmospheres

5. The Atmospheres of the Outer Jovian Worlds
6. Jovian Interiors

UNIT 8: Moons, Rings, and Pluto (2 weeks)

1. The Galilean Moons of Jupiter
2. The Large Moons of Saturn and Neptune
3. The Medium-Sized Jovian Moons
4. Planetary Rings
5. Pluto and Its Moon
    a. Is Pluto a Planet?

UNIT 9: The Sun (3 weeks)

1. The Sun in Bulk
2. The Solar Interior
    a. Layers of the Sun
3. The Solar Atmosphere
4. The Active Sun
    a. Coronal Mass Ejections
    b. Sun Spots
    c. Solar Flares
5. The Heart of the Sun

UNIT 10: Measuring the Stars (1 week)

1. The Solar Neighborhood
2. Luminosity and Apparent Brightness
3. Stellar Temperatures
4. Stellar Sizes
5. The Hertzsprung-Russell Diagram
6. Extending the Cosmic Distance Scale
7. Stellar Masses
8. Characterizing Stars
    a. Main Sequence
    b. Beyond the Main Sequence
9. Evolution of a Sun-like Star
10. The Death of a Low-Mass Star
11. Evolution of High-Mass Stars
12. Supernova Explosions
13. Observing Stellar Evolution in Star Clusters

UNIT 11: The Milky Way Galaxy (2 weeks)

1. Our Parent Galaxy
2. Measuring the Milky Way
3. Galactic Structure
4. The Formation of the Milky Way
5. Galactic Spiral Arms
6. The Mass of the Milky Way Galaxy
7. The Galactic Center

UNIT 12: Cosmology (2 weeks)

1. The Universe on the Largest Scales
2. The Expanding Universe
3. The Fate of the Cosmos
4. The Geometry of Space
5. The Early Universe
6. The Formation of Nuclei and Atoms
7. Cosmic Inflation
8. The Formation of Large-Scale Structures in the Universe

UNIT 13: Life in the Universe (1 week)

1. Life in the Solar System
2. Intelligent Life in the Galaxy
3. The Search for Extraterrestrial Intelligence

IV. UNIT DESCRIPTIONS

Unit 1: Laws of Planetary Motion (4 weeks)

Enduring Understanding:

1. Objects in space move in observable, predictable patterns. Modern astronomy is predicated on the understanding of the laws that govern the attraction and movement of celestial bodies.

Essential Questions:

1. How can one predict an object's continued motion, changes in motion, or stability?
2. What patterns do celestial objects follow?
3. What is gravity and how does it affect objects in space?
4. What are Kepler's laws of Planetary Motion and how do they predict the motion of objects in space?

Learning Objectives:

1. Introduce the concept of planetary motion (HS-ESS1-4)
2. Contrast and evaluate Kepler's laws of planetary motion (HS-ESS1-4)
3. Contrast and evaluate Newton's laws of motion and gravity (HS-ESS1-4)
4. Discuss the historical development of astronomy from Copernicus through Newton
5. Compare and Contrast the geocentric and heliocentric models for the universe
6. Model and explain retrograde motion (HS-ESS1-4)

Unit 2: Light and Matter (4 weeks)

Enduring Understanding:

1. We often understand light as something that allows us to see. However, a greater part of the electromagnetic spectrum contains forms of radiation that cannot be seen by the human eye. Some of the radiation that surrounds us is life sustaining, some medically useful, while others still are life threatening.

Essential Questions:

1. What is Electromagnetic Radiation (EMR)? How is it created in atoms?
2. What can be learned about stars by studying the electromagnetic radiation they emit?
3. What gives a star its energy?
4. What will happen when a star exhausts its fuel supply?

Learning Objectives:

1. Understand the general parts of a wave (HS-ESS1-2)
2. Gain a deeper understanding of the electromagnetic spectrum (HS-ESS1-2)
3. Compare and contrast the forms of radiation (HS-ESS1-2)
4. Differentiate between continuous, absorption and emission spectra (HS-ESS1-2)
5. Compare and contrast frequency and wavelength (HS-ESS1-2)
6. Discuss the Doppler Effect and how it used to determine velocities. (HS-ESS1-2)

Unit 3: Observational Technologies (4 weeks)

Enduring Understanding:

1. Much of what we have gathered about the known Universe has come about by using our ability to observe from great distances. From the first stargazer, to the first telescope, to the more sophisticated technologies of today, our understanding of the Universe is inextricably linked to the technology we utilize to observe and the limitations of such technology.

Essential Questions:

1. How has observational technology changed through time?
2. What limits the size of telescopes?
3. Are all telescopes the same?

Learning Objectives:

1. Explain how optical telescopes work (HS-ESS1-2)
2. Compare and Contrast the two types of optical telescopes (HS-ESS1-2)
3. Introduce the concept of aperture size and its role in light gathering power (HS-ESS1-2)
4. Discuss resolving power of telescopes (HS-ESS1-2)
5. Investigate the advancements that improve modern telescopes (HS-ESS1-2)
6. Differentiate between; radio, IR, UV, and high-energy wavelength astronomy (HS-ESS1-2)

Unit 4: The Solar System (4 weeks)

Enduring Understanding:

1. Our Solar System is both ordinary in its creation and seemingly unusual in the fact that it harbors life. While many solar systems exist, understanding how they are formed and just how long ago our system was created is best understood by studying the object within the system as they are today as well as the interplanetary bits that may perhaps give us better information about the earliest stages of our Solar System.
2. Planets are not the only objects that orbit the Sun. Human nature drives us to understand the origin, composition, and characteristics of asteroids, comets, and other interplanetary debris.

Essential Questions:

1. How long has Earth existed, and how do we know this?
2. How many stars are there in the solar system?
3. Were our Sun and planets among the first generation of objects created in the universe?
4. How do asteroids and comets differ?
5. Are asteroids the remnants of destroyed planets?

Learning Objectives:

1. Introduce the solar system as a whole (HS-ESS1-6)
2. Compare and contrast the objects that constitute the solar system HS-ESS1-6)
3. Apply knowledge of our solar system to extrasolar systems (HS-ESS1-6)
4. Gain a foundation for Earth, the Moon, the planets, and the Sun which will be examined in greater depth in later chapters (HS-ESS1-6)
5. Investigate the composition and characteristics of comets and asteroids (HS-ESS1-6)

Unit 5: The Earth and Moon (4 weeks)

Enduring Understanding:

1. The Moon is not simply Earth's nearest neighbor. The Moon has profoundly influenced Earth's rotation, the tides, internal heat, and life as we know it.
2. The Earth/Moon relationship is a unique system unlike any other in our Solar System.

Essential Questions:

1. Do we see all parts of the Moon's surface at some point throughout the lunar cycle?
2. Does the moon rotate?
3. What causes the Earth's ocean tides?
4. What is the origin of Earth's moon?
5. How are the Earth and Moon similar and how are they different?
6. What can be learned from the impact craters found on the surface of the Moon?

Learning Objectives:

1. Establish a greater understanding of Earth and its Moon (HS-ESS1-6)
2. Compare and Contrast their mass, density, orbit, and structures (HS-ESS1-4)
3. Explain and discuss the interactions between them (HS-ESS1-4)
4. Compare and Contrast the atmospheres of the two (HS-ESS1-6)
5. Compare and Contrast the interiors and exteriors of the two (HS-ESS1-5) (HS-ESS1-6)
6. Introduce the concept of plate tectonics (HS-ESS1-5) (HS-ESS1-6)
7. Compare and Contrast the formation theories for the Moon (HS-ESS1-6)

Unit 6: The Terrestrial Planets (2 weeks)

Enduring Understanding:

1. The terrestrial planets are not only the most like Earth but they are also close enough to possibly embark on a manned mission in the not so distant future. However, due to surface conditions only one terrestrial planet, Mars, is likely to see the arrival of man.

Essential Questions:

1. Have other terrestrial planets supported life?
2. What make Mars so much different than other terrestrial planets?
3. What have space missions revealed about the inner planets?

Learning Objectives:

1. To investigate the terrestrial planets Mercury, Venus, and Mars, Earth (HS-ESS1-4) (HS-ESS1-6)
2. Compare and contrast Mercury, Venus, and Mars, to Earth (HS-ESS1-4) (HS-ESS1-6)
3. Investigate and understand physical characteristics, orbital and rotation rates, atmospheres, surface features, presence of moons, and interiors. (HS-ESS1-4)
4. Outline the evolution of the terrestrial planets (HS-ESS1-6)
5. List the space missions that are instrumental in gathering the information we currently have about the terrestrial planets (HS-ESS1-6)

Unit 7: The Jovian Planets (2 weeks)

Enduring Understanding:

1. The Jovian planets are all significantly larger and of contrasting composition when compared to terrestrial planets. The differences between the two types of planets is best understood when examining how the Solar System formed and what elements would have been available throughout the Solar System during planetary formation.

Essential Questions:

1. Is Jupiter a "failed star"?
2. Is Saturn the only planet with rings?
3. What is the origin of Saturn's rings?
4. Does Jovian planets have continents and oceans?
5. What is Jupiter's Great Red Spot?

Learning Objectives:

1. To investigate the Jovian planets Jupiter, Saturn, Uranus, and Neptune (HS-ESS1-4) (HS-ESS1-6)
2. Compare and contrast Jupiter, Saturn, Uranus, and Neptune (HS-ESS1-4) (HS-ESS1-6)
3. Investigate and understand physical characteristics, orbital and rotation rates, atmospheres, surface features, presence of moons, and interiors. (HS-ESS1-4)
4. Outline the evolution of the planets (HS-ESS1-6)
5. List the space missions that are instrumental in gathering the information we currently have about the Jovian planets (HS-ESS1-6)

Unit 8: Moons, Rings and Pluto (2 weeks)

Enduring Understanding:

1. The moons of other planets, while very different than the Moon of Earth, aim to provide valuable information about our Solar System and provide insight into the formation of the Solar System.

Essential Questions:

1. Are all moons the same?
2. What makes Pluto different than other terrestrial planets?
3. What valuable information can be gained from the investigation and exploration of planetary satellites?

Learning Objectives:

1. Gain a greater understanding of our solar systems large and medium sized moons. (HS-ESS1-4)
2. To compare and contrast the properties and characteristics the Solar Systems' many moons. (HS-ESS1-6)
3. To compare and contrast our Moon to the moons of other planets (HS-ESS1-4)
4. Investigate and understand the formation and characteristics of the ring systems (HS-ESS1-6)
5. Discuss the information known about our smallest and most distant planetary body, Pluto and its moons. (HS-ESS1-4)
6. Discuss the debate over Pluto. Should it be considered a planet? (HS-ESS1-4)

Unit 9: The Sun (3 weeks)

Enduring Understanding:

1. Careful study has revealed our star to be close to 5 billion years old, about halfway through its productive life. It provides the center around which the objects of our Solar System revolve. It has provided Earth with the energy necessary to run its various systems. It is the radiation from the Sun that provides Earth the heat and light required to make life as we know it possible.

Essential Questions:

1. Does the Sun rotate?
2. What is the surface of the Sun like?
3. Why do stars appear to be different colors?
4. How does the Sun compare in size to other stars?
5. How are stars born? Do they eventually die?
6. What are black holes and white dwarves?

Learning Objectives:

1. Investigate and understand the overall properties, layers, structure, and surface activity (HS-ESS1-1)
2. Compare and contrast the differentiated layers of the Sun (HS-ESS1-1)
3. Understand how energy is produced within the Sun (HS-ESS1-1) (HS-ESS1-3)
4. Determine how the color of a star is affected by temperature (HS-ESS1-1) (HS-ESS1-3)
5. Utilize spectroscopy to gather information about objects that emit light (HS-ESS1-3)
6. Be able to outline the generation and transport of energy from the Sun(HS-ESS1-1)

Unit 10: Measuring the Stars – Stellar Evolution (1 week)

Enduring Understanding:

1. There are billions of stars in our Milky Way Galaxy and billions more in galaxies beyond our own. No two stars are the same as they vary in size, mass, and temperature. Our ability to monitor the death and birth of distant stars provides us with critical information about our own star, the Sun.

Essential Questions:

1. How does a star become a star?
2. What methods can be used to determine the distances of stars?
3. Do all stars have planets in orbit around them?
4. How are the characteristics of stars affected by their masses?

Learning Objectives:

1. Understand what it means to be a star. (HS-ESS1-1) (HS-ESS1-3)
2. Compare and contrast the different types of radiation that stars emit. (HS-ESS1-1)
3. Compare and contrast the different groupings of stars. (HS-ESS1-1) (HS-ESS1-4)
4. Discuss briefly the Hertzsprung-Russel diagram (HS-ESS1-3)
5. Explain the two main methods of distance determination (HS-ESS1-1) (HS-ESS1-4)
6. Understand why an eclipse happens. (HS-ESS1-4)

7. The major stellar characteristics, including; spectral type, temperature, mass, size, luminosity, and apparent brightness (HS-ESS1-2) (HS-ESS1-3)
8. Introduce the Binary star (HS-ESS1-4)
9. Discuss the opposing forces of gravity and gas pressure (HS-ESS1-4)
10. Compare and contrast the evolutionary stages of low-mass and high-mass stars (HS-ESS1-1) (HS-ESS1-2) (HS-ESS1-3)
11. Show how star clusters are studied to gain insight into stellar evolution (HS-ESS1-1) (HS-ESS1-2)

Unit 11: Measuring the Stars (1 week)

Enduring Understanding:

1. The Milky Way Galaxy is one of millions of galaxies in the Universe. While they are categorized by their appearance no two galaxies are identical as they vary in size and complexity. Our ability to see and study distant galaxies and their potential interaction provides us with critical information about our own galaxy, the Milky Way.

Essential Questions:

1. Do galaxies rotate?
2. Do galaxies move through space or are they fixed in position?
3. How far is Earth from the center of our galaxy?
4. What keeps all the stars, planets, etc. orbiting the center of a galaxy?

Learning Objectives:

1. Gain a greater understanding of the characteristic of the Milky Way (HS-ESS1-2) (HS-ESS1-3)
2. Discuss the techniques used to determine the Milky Way's characteristics (HS-ESS1-2) (HS-ESS1-3)
3. Examine how distances are determined within the Milky Way (HS-ESS1-2) (HS-ESS1-3)
4. Theorize the formation of the Milky Way (HS-ESS1-2) (HS-ESS1-4)
5. Compare and contrast population I and II stars (HS-ESS1-2)
6. Understand what is known about the center of galaxies (HS-ESS1-2) (HS-ESS1-4)

Unit 12: Cosmology (1 week)

Enduring Understanding:

1. Due to the enormity of the Universe little is truly known. Mounting evidence indicates that objects throughout the Universe are moving away from a given point of origin suggesting a singular event is responsible for the basic structure of our Universe.

Essential Questions:

1. How does the Universe appear to be changing?
2. What theories exist about the creation and evolution of the Universe?

Learning Objectives:

1. Discuss the Big Bang theory as the most widely accepted theory for the origin of the universe (HS-ESS1-2) (HS-ESS1-4)
2. Introduce the concept of critical density in the universe (HS-ESS1-2) (HS-ESS1-4)
3. Compare and contrast the models of the universe (HS-ESS1-2) (HS-ESS1-4)
4. Discuss the age and rate of acceleration of the universe. (HS-ESS1-2) (HS-ESS1-4)

Unit 13: Life in the Universe (1 week)

Enduring Understanding:

1. It has long been imagined that life exists beyond Earth. The vastness of space would lead one to believe that there must be life beyond the confines of Earth. Technologies allow mankind to probe the depths of space to look for suitable places where life could potentially exist or perhaps where life may one day be found.

Essential Questions:

1. Could we live on Mars?
2. What does life need to exist?
3. What problems might arise from making contact with an alien race?

Learning Objectives:

1. Define life and how it may differ from "life as we know it" (HS-ESS2-7)
2. Discuss the characteristics and development of life (HS-ESS2-7)
3. Determine what planetary objects in our solar system are the best candidates for life. (HS-ESS1-2) (HS-ESS1-4) (HS-ESS2-7)
4. Discuss the ways in which we investigate space in search of life (HS-ESS1-2) (HS-ESS2-7)
5. Outline and Investigate the factors of the Drake equation for predicting the number of intelligent, technological civilizations in the Milky Way
6. Outline the difficulties in communicating with other technological civilizations

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Students with special needs and ELL learners may be provided with key vocabulary terms prior to the unit beginning. In particular, the amount of key vocabulary terms should be reduced for ELL students.
2. ELL students may be provided with additional visual aids. For additional modifications, refer to Classroom Instruction that Works for ELL Learners *or the* SIOP protocol.
3. Gifted students may be challenged by asking them to form additional connections between biology, chemistry, and physics.

Cross-Content Connections:

CCCS Literacy: Click on the link to the High School Evidence Statements to see expectations related to literacy for this unit. In addition, a focus of the course will be on the development of the LAL standards for science & technical subjects.

CCCS Math: Students will be expected to perform measurement, modeling, apply algebra, and geometry and statistics. There is a great deal of mathematical applications in the study of astronomy.

Assessments

Classroom assessments are included to primarily guide instruction (formative assessment) and to support decisions made beyond the classroom (summative assessment).

Interdisciplinary Connections and Alignment to Technology standards

Science classes in the Fair Lawn Public schools promote career-readiness skills related to Personal Financial Literacy (9.1) and Career Awareness, Exploration, and Presentation (9.2). Some course concepts from the Career and Technical Education Standards (9.3), but these are not directly correlated since our district is not a CTE program.

The Fair Lawn Public Schools District fosters an environment that promotes career-readiness skills in all content areas. Whereas Career Ready Practices are explored consistently, specific alignment to Personal Finance Literacy (9.1) and Career Awareness, Exploration, and Presentation Standards (9.2) are included in the district level document (below). When appropriate, the Career and Technical Education Standards (9.3) have been reviewed and aligned as well.

Examples: 9.2B: Career exploration in each unit of study.

In addition, every effort is made to integrate technology and engineering into our science classes. Educational Technology (8.1) and Technology Education, Engineering, Design, and Computational Thinking – Programming (8.2) standards are cross connected throughout our science programs.

Examples:
- 8.1A: Use spreadsheets to analyze & interpret data from laboratories, 6-12.
  Use the internet to increase productivity and efficiency, 9-12.
- 8.1B,C: Use data to solve real-world problems, 6-12.
  Use online platforms to collaborate & address global issues, 9-12.
- 8.1F: Collect and analyze data using internet and data simulations, 6-12.
- 8.2A: Become aware of the invention process, 3-5.
- 8.2B: Become aware of the global impacts on technology, 6-12.
- 8.2C: Apply the design process to pushes & pulls, K-2.
- 8.2D: Use tools to reduce work, K-2.

For additional detail on how these standards are integrated throughout the Fair Lawn Schools curriculum, review the Fair Lawn Public Schools District Alignment to Technology & Career Readiness & 21st Century Skills Standards Curriculum Appendix.