

TOWNSHIP OF UNION PUBLIC SCHOOLS



**Hollywood Science
Curriculum Guide
Revised December 18th, 2018**

Mission Statement

The mission of the Township of Union Public Schools is to build on the foundations of honesty, excellence, integrity, strong family, and community partnerships. We promote a supportive learning environment where every student is challenged, inspired, empowered, and respected as diverse learners. Through cultivation of students' intellectual curiosity, skills and knowledge, our students can achieve academically and socially, and contribute as responsible and productive citizens of our global community.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is formulation of a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principals.**
- **To be able to work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Efficient and effective participation in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**
- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation.**

Course Description

This course is designed to allow students the opportunity to enhance their investigation and understanding of Physical Science, Earth Science and the Life Sciences. This is accomplished through the analysis and critique of the scientific themes and concepts presented in select Hollywood feature films, documentaries and other relevant media.

In addition, this course is designed to develop skills in differentiating between real science and pseudo-science.

Utilizing student centered learning, cooperative learning, technology, practical laboratory activities, cross curricular and STEM activities, this full year course will introduce the student to advanced concepts in the Sciences while seeking to increase scientific literacy.

Recommended Textbooks

Ancillary materials will be provided as needed

Course Proficiencies

Students will be able to...

After completing the assigned reading, media viewing, research, laboratory activities, oral and written assessments the students will be able to...

1. Distinguish between real science and pseudo or “junk” science
2. Know the sources and effects of radiation and radioactivity on the human body.
3. Identify the differences between nuclear and non-nuclear power production.
4. Discuss the science of nuclear weapon production and disposal.
5. Understand how different forms of severe weather occur, and how technology is utilized to forecast weather.
6. Track the current and historic trends in climate and weather.
7. Explain the cause and impact of earthquakes, volcanoes, and other geological events on the planet and its inhabitants.
8. Describe how the genetic code leads to the expression of traits and be able to infer that altering the genetic code may lead to a specific genetic disorder.
9. Discuss how science can trace and identify biological agents to protect our populations from widespread disease and epidemics.
10. Understand how industry can knowingly and unknowingly contribute to environmental damage and widespread illness.

Curriculum Units

Unit 1: Pseudoscience/ Scientific Method

Unit 2: Physics/Chemistry/Biology
(Radiation, Radioactivity, Nuclear Energy)

Unit 3: Physical Science/ Earth Science
(Weather, Climate, Meteorology)

Unit 4: Biology/ Genetics/ Life Sciences

Unit 5: Biology/ Life Sciences/ Epidemiology
(Bacteria/ Viruses/ Immunology)

Unit 6: Public Health

Pacing Guide- Course

<u>Content</u>	Number of Days
<u>Unit 1:</u> Pseudoscience/ Scientific Method	20
<u>Unit 2:</u> Physics/Chemistry/Biology (Radiation, Radioactivity, Nuclear Energy)	40
<u>Unit 3:</u> Physical Science/ Earth Science (Weather, Climate, Meteorology)	25
<u>Unit 4:</u> Biology/ Genetics/ Life Sciences	35
<u>Unit 5:</u> Biology/ Life Sciences/ Epidemiology (Bacteria/ Viruses/ Immunology)	34
<u>Unit 6:</u> Public Health	26

Unit 1; Pseudoscience/ Scientific Method

Essential Questions:

- Is there a difference between science and pseudoscience?
- How can the scientific method be utilized in solving everyday problems?
- How is scientific inquiry used as a tool to understand the world?

Instructional Objectives/ Concepts:

- Describe the processes involved in practicing good scientific thought.
- Understand that science can help take better care of personal health, be a wiser consumer, and become a better informed citizen.
- Refine interrelationships among concepts and patterns of evidence among central scientific explanations.
- Use scientific principles and theories to build and refine standards for data collection, posing controls, and presenting evidence.
- Explain how ethics apply to science.

Strategies and Activities may include:

- Laboratory observations and experimentation
- Topical research and presentation.
- Actual Case Studies from News Media
- Overhead transparencies
- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual
- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library Research
- Make observations
- Develop inferences

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests
- Quizzes
- Debate
- Student Presentations
- Lab Reports
- Research Paper
- Exit Cards
- Formative assessments

<ul style="list-style-type: none"> • Observation of following media: • <i>House, MD</i> episode • <i>Phenomenon</i> • <i>The Illusionist</i> 	
<p>NGSS HS-ETS1-1, HS-ETS1-2, HS ETS1-3 HS-PS1-2</p>	<p>CCLS Literacy RST.11-12.4, RST.11-12.7, RST.11-12.8, RST.11-12.9, WHST.11-12.5, WHST.11-12.10</p> <p>CCLS Mathematics MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.3</p>

Unit 2: Physics/ Chemistry/ Biology
(Radiation, Radioactivity, Nuclear Energy)

Essential Questions:

- What is the history of the development of radiation science?
- What are the kinds of nuclear radiation?
- What is the difference between radioactivity and radiation?
- What is half life?
- What are the ethical and moral implications of the use of nuclear science in both the military and industrial settings?

Instructional Objectives/ Concepts:

- Explain how the properties of isotopes, including half-lives, decay modes, and nuclear resonances, lead to useful applications of isotopes.
- Explain the detrimental effects of radiation exposure.
- Understand that society can dictate the direction of scientific research and development.
- Reflect on and revise understandings as new evidence emerges.
- Consider alternative theories to interpret and evaluate evidence based arguments.

Strategies and Activities may include:

- Laboratory observations and experimentation
- Topical research and presentation.
- Actual Case Studies from News Media
- Overhead transparencies
- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual
- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests
- Quizzes
- Debate
- Student Presentations
- Lab Reports
- Research Paper
- Exit Cards
- Formative assessments

<p>Research</p> <ul style="list-style-type: none"> • Make observations • Develop inferences • Observation of following media: <i>The China Syndrome</i> <i>Radium City</i> <i>K-19</i> <i>Fat Man and Little Boy</i> <i>CSI: Miami</i> episode <i>Dead Woman Walking</i> 	
<p>NGSS: HS-ETS1-1, HS-ETS1-2, HS ETS1-3, HS-PS1-8</p>	<p>CCLS Literacy: RST.11-12.3, RST.11-12.4, RST.11-12.7, RST.11-12.8, RST.11-12.9, WHST.11-12.1.D, WHST.11.12.5, WHST.11-12.10</p> <p>CCLS Mathematics MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.3</p>

Unit 3: Physical Science/ Earth Science
(Weather, Climate, Meteorology)

Essential Questions:

- What is the difference between climate and weather?
- What are factors that determine climate change?
- What are Greenhouse gases?
- What is Global Warming?
- What effect does global warming have on weather?
- What is the economic impact of global warming?
- Are there ways to alleviate global warming?

Instructional Objectives/ Concepts:

- Explain how the climate in regions throughout the world is affected by seasonal weather patterns, as well as other factors, such as the addition of greenhouse gases to the atmosphere and proximity to mountain ranges and to the ocean.
- Predict the impact on biogeochemical systems if there was an increase or decrease in internal and external energy.
- Describe the effect of the continuing changes in weather and climate patterns on populations, commerce and ecosystems.
- Interpret the relationship of increasing greenhouse gases and global temperature and weather patterns.
- Understand how ocean water temperature has a profound effect on weather and climate patterns.

Strategies and Activities may include:

- Laboratory observations and experimentation
- Utilize the Davis weather station to acquire and analyze daily local weather data.
- Topical research and presentation.
- Actual Case Studies from News Media
- Overhead transparencies

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests
- Quizzes
- Debate
- Student Presentations

- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual
- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library Research
- Make observations
- Develop inferences
- Observation of following media:
 Various documentaries (*Last Days on Earth, A Global Warning*)
 concerning severe weather
Twister
The Day After Tomorrow

- Lab Reports
- Research Paper
- Exit Cards
- Formative assessments

NGSS

HS-ETS1-1, HS-ETS1-2, HS-ETS1-3
 HS-ESS2-4, HS-ESS2-5

CCLS Literacy

RST.11-12.3, RST.11-12.4, RST.11-12.7, RST.11-12.8, RST.11-12.9,
 WHST.11.12.5, WHST.11-12.10

CCLS Mathematics

MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.3

Unit 4: Biology / Genetics / Life Sciences

Essential Questions:

- How is genetic information passed through generations?
- How can we predict the potential impact on an organism given a change in a specific DNA code?
- What is the potential value and applications of Genome Projects?
- Is a genetic disorder acquired or inherited?
- What effect can genetic engineering have on the nutritive value of food?
- How are transgenic organisms used in meeting consumer needs in the food and drug industry?
- What are the ethical implications of cloning?

Instructional Objectives/Concepts:

- Discuss how inserting, deleting, or substituting DNA segments can alter the genetic code.
- Understand how the resulting features may help, harm, or have little or no effect on the offspring's success in its environment.
- Understand that DNA molecules contain information that determines a sequence of amino acids which result in specific proteins.
- Understand that sorting and recombination of genes in reproduction result in a great variety of possible gene combinations.
- Discuss how genetic changes may lead to profound effects including terminal illness.
- Describe the process of cloning and understand why there is a world-wide ban on human cloning.
- Explain the ABO blood typing system and the genetic reasoning behind it concerning antigens and antibodies.
- Describe agglutination and how and why this happens
- Explain how human blood can be differentiated from animal blood
- Use a Punnet Square to determine genotype and phenotype of offspring

Strategies and Activities may include:

- Laboratory observations and experimentation
- Topical research and presentation.
- Actual Case Studies from News Media

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests

- Overhead transparencies
- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual
- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library Research
- Make observations
- Develop inferences
- Observation of following media:
GATTACA
Lorenzo's Oil
The Future of Food
Food, Inc.
The Island
The Eyes of Nye: Cloning & GMO

- Quizzes
- Debate
- Student Presentations
- Lab Reports
- Research Paper
- Exit Cards
- Formative assessments

NGSS

HS-ETS1-1, HS-ETS1-2, HS-ETS1-3, HS-LS1-1, HS-LS1-2, HS-LS3-1, HS-LS3-2, HS-LS3-3

CCLS Literacy

RST.11-12.3, RST.11-12.4, RST.11-12.7, RST.11-12.8, RST.11-12.9, WHST.11.12.5, WHST.11-12.10

CCLS Mathematics

MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.3

Unit 5: Biology / Life Sciences / Epidemiology
(Bacteria / Viruses / Immunology)

Essential Questions:

- What is a cells response to exposure to bacteria and viruses?
- What will be the effects of virulent exposure on a given population?
- How do various agencies work together to locate, analyze and combat the incidences of epidemics and pandemics?
- How can public education affect the spread of disease?

Instructional Objectives/ Concepts:

- Describe how world travel greatly influences the spread of disease.
- Understand how socio-economic status, hygiene, and access to medical care influence the duration, severity and spread of a disease.
- Understand that cellular function is maintained through the regulation of cellular processes in response to internal and external environmental conditions.
- Understand the importance of monitoring and containing outbreaks of both bacterial and viral agents by various national and international health agencies.
- Demonstrate that science involves practicing productive social interactions with peers.
- Demonstrate that science involves using language, both oral and written, as a tool for making thinking public.

Strategies and Activities may include:

- Laboratory observations and experimentation
- Topical research and presentation.
- Actual Case Studies from News Media
- Overhead transparencies
- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests
- Quizzes
- Debate
- Student Presentations
- Lab Reports

- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library Research
- Make observations
- Develop inferences
- Observation of following media:
Documentaries such as: *Ebola-The Plague Fighters Outbreak*
Zika Documentary
Contagion
House, MD “Airborne”
And the Band Played On

- Research Paper
- Exit Cards
- Formative assessments

NGSS

HS-ETS1-1, HS-ETS1-2, HS-ETS1-3
 HS-LS1-1, HS-LS1-2, HS-LS3-1, HS-LS3-2, HS-LS3-3
 HS-PS2-1

CCLS Literacy

RST.11-12.3, RST.11-12.4, RST.11-12.7, RST.11-12.8, RST.11-12.9,
 WHST.11.12.9, WHST.11-12.10

CCLS Mathematics

MP.2, MP.4, HSN-Q.A.1, HSN-Q.A.3

Unit 6: Public Health

Essential Questions:

- How does scientific knowledge benefit, deepen and broaden, the public's consciousness of moral and ethical and health issues?
- How can science use language, both oral and written, as a tool for making thinking public?
- How do certain chemicals, pathogens, and high energy radiation, seriously impair normal cell functions and the health of the organism?
- How do natural and human made chemicals circulate with water in the hydrologic cycle?

Instructional Objectives/Concepts:

- Understand that scientists engage in multiple forms of discussion in order to process, make sense of, and learn from other's ideas, observations, and experiences.
- Understand that science represents ideas using literal representations, such as graphs, tables, journals, concept maps, and diagrams.
- Describe how a disease is the result of a malfunctioning system, organ, and cell, and relate this to possible treatment interventions.
- Analyze and explain the sources and impact of chemicals on a specific water supply.

Strategies and Activities may include:

- Laboratory observations and experimentation
- Topical research and presentation.
- Actual Case Studies from News Media
- Overhead transparencies
- Demonstrations
- Web Quests
- Laboratory Activities: Group and Individual
- Small Group Discussions
- Debate
- Student Research/ Letter Writing, Interviews, Library Research

Evaluations may include:

- Case Study Analysis
- Final Exam
- Tests
- Quizzes
- Debate
- Student Presentations
- Lab Reports
- Research Paper
- Exit Cards
- Formative assessments

- Make observations
- Develop inferences
- Observation of following media:
 Documentary: *Secrets Through the Smoke*
 Feature films:
The Insider
A Civil Action
Erin Brockovich

NGSS:
 HS-ETS1-1, HS-ETS1-2, HS-ETS1-3
 HS-PS1.2, HS-PS1.8, HS-LS1-2, HS-LS1-4

CCLS Literacy
 RST.11-12.7, RST.11-12.8, RST.11-12.9, WHST.11.12.4, WHST.11-12.5, WHST.11-12.10

CCLS Mathematics
 MP.2, HSN-Q.A.1, HSN-Q-A.3

Next Generation Science Standards and Common Core Literacy Standards

EXPECTED OUTCOMES with link to NGSS and CCLS

The following list identifies the relevant standards to the course material:

- 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-PS1-2 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
- HS-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay
- 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-LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
- HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
- HS-LS1-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

- HS-LS3-1 Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
- HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
- HS-LS3-3 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
- HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
- HS-ESS2-4 Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate
- HS-ESS2-5 Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
- RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
- RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text
- RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

- RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible, and corroborating or challenging conclusions with other sources of information.
- RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- WHST.11-12.1.D Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- WHST.11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- 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.
- WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.
- WHST.11-12.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
- HSN.QA.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.QA.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
- MP.2 Reason abstractly and quantitatively with mathematics
- MP.4 Model with mathematics

The following standards are threaded throughout all units of the NJSLS-Science:

21st Century Life and Career Standards: Career Awareness, ELD Standards, and Technology Standards.

WIDA ELD Standards: Teaching with Standards | WIDA

WIDA has established language development standards for English and Spanish. These standards represent the language students need to be successful in early childhood programs and Grades K-12.

The first standard, **Social and Instructional Language**, reflects the ways in which students interact socially to build community and establish working relationships with peers and teachers in ways that support learning.

The remaining four standards present ways multilingual learners can communicate information, ideas and concepts necessary for academic success in **Language Arts, Math, Science** and **Social Studies**.

Specifically in Science Standard 4- Language of Science- English Language learners communicate information, ideas and concepts necessary for academic success in the content area of science.

New Jersey Student Learning Standards

Standard 9

21st Century Life and Careers

In today's global economy, students need to be lifelong learners who have the knowledge and skills to adapt to an evolving workplace and world. To address these demands, Standard 9, 21st Century Life and Careers, which includes the 12 Career Ready Practices, establishes clear guidelines for what students need to know and be able to do in order to be successful in their future careers and to achieve financial independence.

Mission: *21st century life and career skills enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.*

Vision: To integrate 21st Century life and career skills across the K-12 curriculum and to foster a population that:

- Continually self-reflects and seeks to improve the essential life and career practices that lead to success.
- Uses effective communication and collaboration skills and resources to interact with a global society.
- Is financially literate and financially responsible at home and in the broader community.
- Is knowledgeable about careers and can plan, execute, and alter career goals in response to changing societal and economic conditions.
- Seeks to attain skill and content mastery to achieve success in a chosen career path.

Career Ready Practices

Career Ready Practices describe the career-ready skills 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. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

CRP1. Act as a responsible and contributing citizen and employee.

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that

contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2. Apply appropriate academic and technical skills.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

CRP3. Attend to personal health and financial well-being.

Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial wellbeing, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.

CRP4. Communicate clearly and effectively and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP5. Consider the environmental, social and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

CRP6. Demonstrate creativity and innovation.

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices,

and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP7. Employ valid and reliable research strategies.

Career-ready individuals are discerning in accepting and using new information to make decisions, changes. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

CRP9. Model integrity, ethical leadership and effective management.

Career-ready individuals consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

CRP10. Plan education and career paths aligned to personal goals.

Career-ready individuals take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

CRP11. Use technology to enhance productivity.

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks—personal and organizational—of technology applications, and they take actions to prevent or mitigate these risks.

CRP12. Work productively in teams while using cultural global competence.

Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

2014 New Jersey Core Curriculum Content Standards - Technology

Content Area		Technology	
Standard		8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.	
Strand		A. Technology Operations and Concepts: <i>Students demonstrate a sound understanding of technology concepts, systems and operations.</i>	
Grade Level bands	Content Statement Students will:	Indicator	Indicator
P	Understand and use technology systems.	8.1.P.A.1	Use an input device to select an item and navigate the screen
		8.1.P.A.2	Navigate the basic functions of a browser.
	Select and use applications effectively and productively.	8.1.P.A.3	Use digital devices to create stories with pictures, numbers, letters and words.
		8.1.P.A.4	Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
		8.1.P.A.5	Demonstrate the ability to access and use resources on a computing device.
K-2	Understand and use technology systems.	8.1.2.A.1	Identify the basic features of a digital device and explain its purpose.

	Select and use applications effectively and productively.	8.1.2.A.2	Create a document using a word processing application.
		8.1.2.A.3	Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each.
		8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
		8.1.2.A.5	Enter information into a spreadsheet and sort the information.
		8.1.2.A.6	Identify the structure and components of a database.
		8.1.2.A.7	Enter information into a database or spreadsheet and filter the information.
3-5	Understand and use technology systems.	8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
	Select and use applications effectively and productively.	8.1.5.A.2	Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.
		8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
		8.1.5.A.4	Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data.
		8.1.5.A.5	Create and use a database to answer basic questions.
		8.1.5.A.6	Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data.
6-8	Understand and use technology systems.	8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.
	Select and use applications effectively and productively.	8.1.8.A.2	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
		8.1.8.A.3	Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
		8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results
		8.1.8.A.5	Create a database query, sort and create a report and describe the process, and explain the report results.
9-12	Understand and use technology systems.	8.1.12.A.1	Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
	Select and use applications effectively	8.1.12.A.2	Produce and edit a multi-page digital document for a commercial or

	and productively.		professional audience and present it to peers and/or professionals in that related area for review.
		8.1.12.A.3	Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.
		8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
		8.1.12.A.5	Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results.
Content Area		Technology	
Standard		8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.	
Strand		B. Creativity and Innovation: <i>Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.</i>	
Grade Level bands	Content Statement Students will:	Indicator	Indicator
P	Apply existing knowledge to generate new ideas, products, or processes.	8.1.P.B.1	Create a story about a picture taken by the student on a digital camera or mobile device.
K-2	Create original works as a means of personal or group expression.	8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources .
3-5		8.1.5.B.1	Collaborative to produce a digital story about a significant local event or issue based on first-person interviews.
6-8		8.1.8.B.1	Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web).
9-12		8.1.12.B.2	Apply previous content knowledge by creating and piloting a digital learning game or tutorial.
Content Area		Technology	
Standard		8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.	
Strand		C. Communication and Collaboration: <i>Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.</i>	
Grade	Content Statement	Indicator	Indicator

Level bands			
P	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.	8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
K-2	Communicate information and ideas to multiple audiences using a variety of media and formats. Develop cultural understanding and global awareness by engaging with learners of other cultures.	8.1.2.C.1	Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
3-5		8.1.5.C.1	Engage in online discussions with learners of other cultures to investigate a worldwide issue from multiple perspectives and sources, evaluate findings and present possible solutions, using digital tools and online resources for all steps.
6-8		8.1.8.C.1	Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.
9-12		8.1.12.C.1	Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
Content Area	Technology		
Standard	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.		
Strand	D. Digital Citizenship: <i>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.</i>		
Grade Level bands	Content Statement	Indicator	Indicator
K-2	Advocate and practice safe, legal, and responsible use of information and technology.	8.1.2.D.1	Develop an understanding of ownership of print and nonprint information.
3-5	Advocate and practice safe, legal, and responsible use of information and technology.	8.1.5.D.1	Understand the need for and use of copyrights.
		8.1.5.D.2	Analyze the resource citations in online materials for proper use.
	Demonstrate personal responsibility for	8.1.5.D.3	Demonstrate an understanding of the need to practice cyber safety, cyber

	lifelong learning.		security, and cyber ethics when using technologies and social media.
	Exhibit leadership for digital citizenship.	8.1.5.D.4	Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media.
6-8	Advocate and practice safe, legal, and responsible use of information and technology.	8.1.8.D.1	Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
	Demonstrate personal responsibility for lifelong learning.	8.1.8.D.2	Demonstrate the application of appropriate citations to digital content.
		8.1.8.D.3	Demonstrate an understanding of fair use and Creative Commons to intellectual property.
	Exhibit leadership for digital citizenship.	8.1.8.D.4	Assess the credibility and accuracy of digital content.
8.1.8.D.5		Understand appropriate uses for social media and the negative consequences of misuse.	
9-12	Advocate and practice safe, legal, and responsible use of information and technology.	8.1.12.D.1	Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
	Demonstrate personal responsibility for lifelong learning.	8.1.12.D.2	Evaluate consequences of unauthorized electronic access (e.g., hacking) and disclosure, and on dissemination of personal information.
		8.1.12.D.3	Compare and contrast policies on filtering and censorship both locally and globally.
	Exhibit leadership for digital citizenship.	8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.
8.1.12.D.5		Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.	
Content Area	Technology		
Standard	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.		
Strand	E: Research and Information Fluency: <i>Students apply digital tools to gather, evaluate, and use information.</i>		

Grade Level bands	Content Statement Students will:	Indicator	Indicator
P	Plan strategies to guide inquiry.	8.1.P.E.1	Use the Internet to explore and investigate questions with a teacher's support.
K-2	Plan strategies to guide inquiry Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
3-5	Plan strategies to guide inquiry. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.5.E.1	Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.
6-8	Plan strategies to guide inquiry. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.8.E.1	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.

	Process data and report results.		
9-12	Plan strategies to guide inquiry. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks. Process data and report results.	8.1.12.E.1	Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
		8.1.12.E.2	Research and evaluate the impact on society of the unethical use of digital tools and present your research to peers.
Content Area	Technology		
Standard	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.		
Strand	F: Critical thinking, problem solving, and decision making: <i>Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</i>		
Grade Level bands	Content Statement Students will:	Indicator	Indicator
K-2	Identify and define authentic problems and significant questions for investigation. Plan and manage activities to develop a solution or complete a project. Collect and analyze data to identify solutions and/or make informed decisions. Use multiple processes and diverse perspectives to explore alternative	8.1.2.F.1	Use geographic mapping tools to plan and solve problems.

	solutions.		
3-5	<p>Identify and define authentic problems and significant questions for investigation.</p> <p>Plan and manage activities to develop a solution or complete a project.</p> <p>Collect and analyze data to identify solutions and/or make informed decisions.</p> <p>Use multiple processes and diverse perspectives to explore alternative solutions</p>	8.1.5.F.1	Apply digital tools to collect, organize, and analyze data that support a scientific finding.
6-8	<p>Identify and define authentic problems and significant questions for investigation.</p> <p>Plan and manage activities to develop a solution or complete a project.</p> <p>Collect and analyze data to identify solutions and/or make informed decisions.</p> <p>Use multiple processes and diverse perspectives to explore alternative solutions.</p>	8.1.8.F.1	Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
9-12	<p>Identify and define authentic problems and significant questions for investigation.</p> <p>Plan and manage activities to develop a solution or complete a project.</p>	8.1.12.F.1	Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

	Collect and analyze data to identify solutions and/or make informed decisions.		
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	Use multiple processes and diverse perspectives to explore alternative solutions.		
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