Science Enrichment 8

Unit Title: **Forensics**

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

MS-LS1-3-Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

MS-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

MS-LS3-1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

Science and Engineering Practices (SEP)

- **Engaging in Argument from Evidence-** Engaging in argument from evidence in 6–8 builds from grades K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. CUse an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon. (MS-LS1-3)
- **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 6–8 builds on K–5 experiences and progresses to evaluating the merit and validity of ideas and methods. Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-LS1-8)
- **Developing and Using Models-** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop and use a model to describe phenomena. (MS-LS3-1)

Disciplinary Core Ideas (DCI)

- In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)
- Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories. (MS-LS1-8)
- Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions of the organism and thereby change traits. (MS-LS3-1)

Crosscutting Concepts (CCC)

- **Patterns:**Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.

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- **Cause and Effect:** Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.
- **Structure and function**: Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components and connections of the components to reveal its function and solve a problem.
- **Scientific Knowledge is Based on Empirical Evidence** -Science knowledge is based upon logical and conceptual connections between evidence and explanations.

Career Readiness, Life Literacies and Key Skills		
Standard	**Performance Expectations**	**Core Ideas**
9.4.8.CI.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.
9.4.8.CI.4	Explore the role of creativity and innovation in career pathways and industries.	
9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).	Multiple solutions often exist to solve a problem.
9.4.8.DC.1	Analyze the resource citations in online materials for proper use.	Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own work.
9.4.8.DC.2	Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).	
9.4.8.DC.7	Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.	Digital communities are used by individuals to share information, organize, and engage around issues and topics of interest.
9.4.8.DC.8	Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).	Digital technology and data can be leveraged by communities to address effects of climate change.
9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).	Sources of information are evaluated for accuracy and relevance when considering the use of information.
9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).	Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.
9.4.8.TL.	Select appropriate tools to organize and present information digitally.	

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Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
-The principles of scientific method are required in ALL forensic scientific analysis. -Forensic science utilizes concepts from all scientific disciplines. -Comprehensive crime laboratories provide a variety of services including, but not limited to, a physical science unit, biology unit, firearms unit, document examination unit, photography unit, toxicology, fingerprint analysis, polygraph administration, voiceprint analysis, and crime-scene investigation. -Analyze the common ridge characteristics of a fingerprint. -Identify and compare the three major fingerprint patterns and their respective subclasses. -Physical evidence is crucial in linking victims and suspects to a crime scene. -Physical evidence can link specific persons or objects to a crime scene, or may contain class characteristics linking a type of object to a crime Scene. -Forensic science utilizes concepts from all scientific disciplines. -The principles of scientific method are required in ALL forensic scientific analysis. -Apply the principles of DNA as a means to identifying one person with a reasonable certainty. -An autopsy is performed if a death is suspicious or unexplained. -A forensic entomologist studies the development of insect larvae in a body to estimate the time of death. -Handwriting becomes personalized almost as soon as students begin learning it. -Questioned documents and other collected documents can be analyzed for handwriting comparisons to determine if the author of each is the same. -Inks (printer, pen, and photocopier) can be compared to determine if they share a common source.	● What is the role of forensic science in modern society? ● How has the field of forensic science evolved over the past hundred ● years? ● How have scientific advancements contributed to the evolution of forensic science? ● How is the depiction of forensic science in popular culture misleading? ● How can the various methods for processing,classifying, and identifying fingerprints aid in a criminal investigation? ● Fingerprints are unique to individuals and can be used as evidence in arguing which individuals were present at a crime scene? ● What is the difference between the identification and comparison of physical evidence? ● Why is it important to collect evidence in a procedural manner? ● How can physical evidence be used to reconstruct a crime scene? ● What information can be gained from the proper processing of evidence at a crime scene? ● How is DNA unique to every individual? ● What is the significance or value of DNA evidence to forensic investigation? ● How can an autopsy help solve a crime? ● Why is time of death important? ● How can environmental factors influence the time estimate? ● How can handwriting be used as individual evidence? ● How can forensic scientists detect forgeries and counterfeits?

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Content:	**Skills (Objectives):**
- High Wire Magazine (Volumes 1-8) - Evidence and Investigation Packet (E/I Packet)	● Define forensic science and list the major disciplines it encompasses. ● Analyze the common ridge characteristics of a fingerprint. ● Identify and compare the three major fingerprint patterns and their respective subclasses. ● Identify the common types of physical evidence encountered at crime scenes and describe proper techniques for packaging common types of physical evidence. ● Explain the difference between the identification and comparison of physical evidence. ● Identify what common characteristics are associated with handwriting and list important guidelines for collecting known writings for comparison ● to a questioned document. ● Define the crime scene and identify the steps followed in crime scene investigation. ● Describe the use and information obtained from physical evidence found at the crime scene. ● Distinguish between cause, manner, and mechanisms of death ● Explain how the development of rigor, algor and livor mortis occur ● Explain how time of death estimates may be linked to insect evidence

Interdisciplinary Connections:

ELA/Literacy -NJSLS

RST.6-8.1-Cite specific textual evidence to support analysis of science and technical texts.
RST.6-8.7-Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
RST.6-8.9-Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
WHST.6-8.2-Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
WHST.6-8.9-Draw evidence from literary or informational texts to support analysis, reflection, and research.
SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
SL.8.4-Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

Mathematics -NJSLS

MP.2-Reason abstractly and quantitatively.
7.EE.3-Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
6.RP.A.3-Use ratio and rate reasoning to solve real-world and mathematical problems.
6.SP.B.5-Summarize numerical data sets in relation to their context

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Stage 2: Assessment Evidence

Performance Task(s):

Case Files
-The Bank Heist in New Metropolis

Tell Tale Prints
Using forensic knowledge, cast a shoe print that was found at a crime
(HireWire Magazine V6: Issue 1 pg 32 Project)

Find Out More
What is the biggest challenge for law enforcement in your community? Research you area, interview law enforcement and create a graph of major crimes in the community. Think of ways to create public awareness of the issues.
(High Wire Magazine Vol 8: Issue 2 pg 32 project)

Other Evidence:
Do Nows
Classwork
Interactive Notebook
Class discussions
Closure activities (ex. exit tickets, kahoots, KWL charts)
Personal digital responses (Kahoot, Quizizz, Quizlet, etc.)
Homework
On-the-fly assessment
Graphic Organizers
Scientific inquiry analysis
Common Formative Assessments
Summative Unit Assessments

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Fingerprint analysis (E/I Packet)
- ID your own fingerprints (E/I packet)
- Lifting fingerprints Lab (E/I packet)
- Tire Track Analysis(E/I packet)
- Soil Sampling analysis (E/I packet)
- Soil Sampling Lab Investigation(E/I packet)
- Footprint Analysis (E/I packet)
- Handwriting Analysis (E/I packet)
- Chromatography Lab (E/I packet)
- Witness briefing and Sketch artist lab (E/I packet)
- DNA techniques
- Using entomology in forensics activity
- Post mortem interval webquest

Teaching Scientific Practices

- Guide students through appropriate laboratory techniques (safety, accuracy, frequency, data collection, etc.)
- Students will utilize the engineering and design process to ask questions, plan and carry out investigations, refine models, design solutions, construct explanations, and design solutions.

Literacies

Resources:

- Launch Labs
- Content Vocabulary
- MiniLabs
- Content Practice worksheets
- Math Skills
- Enrichment
- Challenge
- Lesson Quizzes
- Kessler Science
- Labs
- Key Concept Builder activities
- Online quiz
- Online Standardized Test Practice
- YouTube videos
- BrainPop videos
- Flocabulary
- Newsela
- Readworks.org
- Scholastic Science World magazine

-The Science Spot
http://sciencespot.net/Pages/classforsci.html

-History of Forensic Science:
www.crimezzz.net/forensic_history

-Criminal Fact Investigation Index:
www.tncrimlaw.com/forensic/fsbindx

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- Use reading strategies to read non-fiction text (preview, question, reflect, highlight, recite, review, utilize text structure, etc.) - Digital tools - utilize features available on ebooks such as highlighting, bookmarking, linking to more information, etc. - Digital literacy - Find and evaluate digital sources. Communicate clearly using digital platforms Questioning - Present guiding leveled questions to students. See differentiation section for specific questions. Formative assessment response modalities - Teacher/student question discussion - Thumbs up/thumbs down - Rate yourself on understanding on a fist to five scale - Google Forms - Digital polling devices (Kahoot, Quizizz, etc.) - Exit tickets/responses - Whiteboards Learning Strategies - Think, Pair, Share - Direct instruction - Jigsaw - Cooperative groups - Discussion in class and discussion boards - Socratic Seminar Learning Management - Google Classroom - share information with students, post assignments, collect feedback - Google Docs & Google Slides - creation and presentation tools	-Forensic History Timeline: http://forensicsciencecentral.co.uk -History timeline CBS TV: www.cbsnews.com/htdocs/forensics/timeline -Crime scene investigation protocol: www.nij.gov/topics/law-enforcement/investigations/crime-scene -Bill Nye Forensics https://youtu.be/dP3xuHnbXM4 Take a Tour of Forensics Science Lab Get the prints Tire Track Challenge Who Ate the Cheese? Crime Scene Insects LGBT and Disabilities Resources: ● LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth ● LGBTQ+ Books DEI Resources: ● Learning for Justice ● GLSEN Educator Resources ● Supporting LGBTQIA Youth Resource List ● Respect Ability: Fighting Stigmas, Advancing Opportunities ● NJDOE Diversity, Equity & Inclusion Educational Resources ● Diversity Calendar

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Page Keeley Science Probes Interactive Science notebooks - higher level of Costa's questions created	Interactive Science notebooks Scaffolded guiding questions - on level Provide challenging tasks with support to	Interactive Science notebooks - templates provided by teacher Scaffolded guiding questions - below level	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual,

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Scaffolded guiding questions - above level Less structure provided for assignments/assessments Heterogeneous grouping Research independently or collaboratively with minimal teacher guidance Laboratory investigations designed and carried out by students	allow students to experience success Moderate amount of scaffold on assignments Heterogeneous grouping Laboratory investigations designed by students with teacher assistance and carried out by students	Break down assignments into smaller tasks Structured, predictable classroom Graphic organizers/Study guides provided Copy of class notes/presentation provided to student Utilize student's best personal learning modality (auditory, visual, kinesthetic) Heterogeneous grouping Laboratory investigations provided by teacher for students to carry out	kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Unit Title: **Pollinators in our World**

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms

MS-LS2-1 Analyze and interpret data to provide evidence for effects of resource availability on organisms and population of organisms and populations of organisms in an ecosystem.

MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations

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Science and Engineering Practices (SEP)

- **Engaging in Argument from Evidence-** Engaging in argument from evidence in 6–8 builds from grades K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. Use an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-LS1-4)
- **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories. Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-5)
- **Analyzing and Interpreting Data** Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. Analyze and interpret data to provide evidence for phenomena. (MS-LS2-1)
- **Constructing Explanations and Designing Solutions-** Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories. Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena. (MS-LS2-2)

Disciplinary Core Ideas (DCI)

- Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4)
- Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)
- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)
- Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

Crosscutting Concepts (CCC)

- **Cause and Effect** - Cause and effect relationships may be used to predict phenomena in natural or designed systems.

- **Patterns -** Patterns can be used to identify cause and effect relationships.

- **Stability and Change-** Stability and Change Small changes in one part of a system might cause large changes in another part.

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Career Readiness, Life Literacies and Key Skills		
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9.4.8.TL.3	Select appropriate tools to organize and present information digitally.	

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
- Explain how a loss of bee species affects an ecosystem's biodiversity and human food sources. - Understand how bees contribute to higher biodiversity within an ecosystem, and the impact of this on human food sources. - Understand how a variety of bee species contribute to higher biodiversity within an	● What is a pollinator? ● Why do we care about entomophily? ● What adaptations do bees have to be effective pollinators and to survive? ● What dangers do pollinators face? ● Why should people help pollinators to survive? ● What role do pollinators play in ecosystems?

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<td>ecosystem and how humans benefit from this biodiversity.
- Make a claim about bees and their importance to us supported by patterns of evidence in data.
- Discuss whether human impacts are affecting the stability of honey bee populations and the ecosystems they support.
- Identify the stages of a Monarch
- Identify the role of a butterfly in pollination
- Monarch butterfly migration</td>
<td>● How does a decline in bee species affect biodiversity and human food supplies?
● What impart are human activities having on biodiversity?
● What are the stages of a Monarch butterfly?
● What is the role of a butterfly in pollination?
● Where and when Monarch butterflies migrate?</td>
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<tr>
<td>Content:

NGSS Unit: The Importance of Biodiversity: Do Need Save the Bees Teachers Unit
https://stileapp.com/au/library/publishers/stile/compilations/science-ngss/629061e6-0bed-4065-87c7-0cdf5321dfe8/lessons

US Dept of Agriculture: Pollinators-Monarch butterfly Activity Guide
https://www.fs.usda.gov/wildflowers/pollinators/Monarch_Butterfly/teacherandstudent/index.shtml</td>
<td>Skills(Objectives):

● An engineering challenge that encourages multiple solutions to a common problem
● Exploring big ideas of this unit by solving the mystery of missing pollinators
● A simulation that communicates the important role played by pollinators and the consequences of their declining number
● Describe the stages of a pollinators life
● Discuss the habitat requirements of a Monarch butterfly.
● Describe the main kinds of storms, and how they form.
● Identify the factors that influence temperature and precipitation.
● Develop a storm safe structure.
● Investigate a local or global environmental issue by addressing the underlying scientific causes and develop possible solutions.
● Investigate the routes and reasons for the Monarchs migration</td>
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<tr>
<td colspan="2">Interdisciplinary Connections:

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SL.8.4-Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

Mathematics -NJSLS
MP.2-Reason abstractly and quantitatively.</td>
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6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6.EE.B.6 Use variables to represent numbers and write expressions when solving real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
7.EE.B.4 Use variables to represent a real-world mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Stage 2: Assessment Evidence

Performance Task(s):

Save the Bees Prototype?
Students apply everything they have learned over the course of the associated lessons about pollinators, habits, biodiversity, and humans and environmental effects for pollinator loss to create a solution to saving the bees or helping with pollination.
https://stileapp.com/au/library/publishers/stile/compilations/science-ngss/629061e6-0bed-4065-87c7-0cdf5321dfe8/grade/6/lessons

Monarch Conservation project
Create a butterfly garden, Grow host plants, refurbish a butterfly garden, encourage their town to create a butterfly garden. These projects are to enhance students' knowledge of butterfly ecology and conservation through hands-on interactive learning experiences, raise public awareness, and provide opportunities to contribute to habitat protection and restoration.

Next Generation Science Assessment:
- **Importance of biodiversity assessment https://stileapp.com/au/library/publishers/stile/compilations/science-ngss/629061e6-0bed-4065-87c7-0cdf5321dfe8/grade/6/preview/test-the-importance-of-biodive/qklW**

Other Evidence:
Do Nows
Classwork
Interactive Notebook
Class discussions
Closure activities (ex. exit tickets, kahoots, KWL charts)
Personal digital responses (Kahoot, Quizizz, Quizlet, etc.)
Homework
On-the-fly assessment
Graphic Organizers
Scientific inquiry analysis
Common Formative Assessments
Summative Unit Assessments

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- What are Pollinators?
- Mystery of Missing Bees (NGSS)
- Biodiversity of Bees (NGSS)
- Changes in biodiversity
- The benefit of bees
- Human impact on bees
- Human impact on ecosystems
- Phototype for saving the bees (STEM)
- Identify the stages of a Monarch

Resources:
- Get Ready to Read
- Launch Labs
- Content Vocabulary
- MiniLabs
- Content Practice worksheets
- Math Skills
- Enrichment
- Challenge
- Lesson Quizzes

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- Identify the role of a butterfly in pollination
- Monarch butterfly migration

Teaching Scientific Practices
- Guide students through appropriate laboratory techniques (safety, accuracy, frequency, data collection, etc.)
- Students will utilize the engineering and design process to ask questions, plan and carry out investigations, refine models, design solutions, construct explanations, and design solutions.

Literacies
- Use reading strategies to read non-fiction text (preview, question, reflect, highlight, recite, review, utilize text structure, etc.)
- Digital tools - utilize features available on ebooks such as highlighting, bookmarking, linking to more information, etc.
- Digital literacy - Find and evaluate digital sources. Communicate clearly using digital platforms

Questioning - Present guiding leveled questions to students. See differentiation section for specific questions.

Formative assessment response modalities
- Teacher/student question discussion
- Thumbs up/thumbs down
- Rate yourself on understanding on a fist to five scale
- Google Forms
- Digital polling devices (Kahoot, Quizizz, etc.)
- Exit tickets/responses
- Whiteboards

Learning Strategies
- Think, Pair, Share
- Direct instruction
- Jigsaw
- Cooperative groups
- Discussion in class and discussion boards
- Socratic Seminar

Learning Management
- Google Classroom - share information with students, post assignments, collect feedback
- Google Docs & Google Slides - creation and presentation tools
- Kessler Science
- Labs
- Key Concept Builder activities
- Chapter Tests
- Online quiz
- Online Standardized Test Practice
- YouTube videos
- BrainPop videos
- Flocabulary
- Newsela
- Readworks.org
- Scholastic Science World magazine
- Edulastic
- IXL

Webquest for Unique Pollinators

Build a Bee Hotel

Create a Butterfly Garden

Bee Week Middle School

Biodiversity Bees
https://www.nps.gov/teachers/classrooms/upload/BeeWeek-MiddleSchool.pdf

LGBT and Disabilities Resources:
- LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth
- LGBTQ+ Books

DEI Resources:
- Learning for Justice
- GLSEN Educator Resources
- Supporting LGBTQIA Youth Resource List
- Respect Ability: Fighting Stigmas, Advancing Opportunities
- NJDOE Diversity, Equity & Inclusion Educational Resources
- Diversity Calendar

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Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Page Keeley Science Probes Interactive Science notebooks - higher level of Costa's questions created Scaffolded guiding questions - above level Less structure provided for assignments/assessments Heterogeneous grouping Research independently or collaboratively with minimal teacher guidance Laboratory investigations designed and carried out by students	Interactive Science notebooks Scaffolded guiding questions - on level Provide challenging tasks with support to allow students to experience success Moderate amount of scaffold on assignments Heterogeneous grouping Laboratory investigations designed by students with teacher assistance and carried out by students	Interactive Science notebooks - templates provided by teacher Scaffolded guiding questions - below level Break down assignments into smaller tasks Structured, predictable classroom Graphic organizers/Study guides provided Copy of class notes/presentation provided to student Utilize student's best personal learning modality (auditory, visual, kinesthetic) Heterogeneous grouping Laboratory investigations provided by teacher for students to carry out	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Science Enrichment 8

Pacing Guide

Course Name	Content/Resources	Standards
UNIT 1:		
Forensics 25 Days	Intro to/ jobs in Forensics: 3 days Fingerprints: 3 days Tire Track analysis: 2 day Soil sampling analysis/lab: 3 days Footprint analysis/lab: 2 days Handwriting analysis/chromatography: 3 days Witness identification DNA and testimony : 3 days Post Mortem/entomology: 3 days Case File Assessment: 3 days	MS-LS 1-3 MS-LS 1-8 MS-LS 3-1
UNIT 2:		
Pollinators 20 Days	Intro to pollinators:2 days Bees and biodiversity: : 8 days Monarch Conservation: 8 days Other pollinators: 2 days	MS-LS1-4 MS-LS1-5 MS-LS2-1 MS-LS2-2 MS-LS2-4