

Natural Resources & Conservation/Horticultural Studies  
CASE Curriculum: Level III Unit Outline

**Unit 1: Agenda Book Review/Classroom Rules**

- Class discussion of student agenda book
- Review of classroom rules
- School safety protocols, district drills and emergency evacuations, behavior and meeting locations
- Review expectations and school policies for electronic devices

**Unit 2: Safety, First Aid, Personal Protective Equipment and Shop Attire**

- Identify, discuss, locate first aid and blood borne kits
- Identify, locate and demonstrate function and purpose of the Emergency Eye Station
- Identify, discuss, locate fire extinguisher
- Identify, distribute and discuss function and uses of protective eyewear, appropriate personal protective equipment (PPE) required in shop, and acceptable shop attire
- Identify, show location and discuss function and uses of the SDS (Safety Data Sheets) and how to interpret the information about paints and aerosols, content precautions, material labeling
- Equipment safety protocols
- Identify, demonstrate shop ventilation systems where applicable
- Identify locate and discuss function of shop flammable cabinet where applicable
- Discuss and demonstrate shop housekeeping of supplies, work stations and room maintenance
- Discuss and identify electrical safety considerations in the shop area
- Compile a safety section in the student shop notebook
- Identify, demonstrate air gauge function and operation where applicable
- Completion of online safety course and successful passing of safety test(s)

**Unit 3: Environmental Science Issues (ESI): Issues Analysis**

- Students will know and understand:
  - Solving environmental problems requires research, planning, and communication skills
  - Organization and record keeping are important to success in environmental science
  - Environmental problems occur locally, nationally, and globally
  - Issues, problems, and facts have different characteristics
  - Solving environmental problems includes economic, political, and ethical considerations related to the issue, which require in-depth analysis

- Ethical questions surrounding environmental issues generate discussions and opinions based on personal beliefs
- Public perception of environmental issues is influenced by people’s background and knowledge
- Effective communication and conflict resolution foster a working relationship when differing viewpoints exist
- Media bias affects how humans perceive and respond to environmental issues

**Unit 4: ESI: Biodiversity**

- Students will know and understand:
  - Researchers observe environmental systems by collecting quantitative and qualitative data
  - Biodiversity of an environment is measured by analyzing species evenness and species richness
  - Environmental decisions are made using data that is precise and accurate.
  - Researchers use GIS and GPS to collect, analyze, and present environmental data
  - Healthy ecosystems have a diverse number of species dependent upon each other
  - Complex relationships in an ecosystem are analyzed using models.
  - The functionality of an ecosystem is dependent upon limiting factors.
  - Natural and anthropogenic events cause changes at all trophic levels in an ecosystem
  - Biodiversity is affected when new organisms are introduced to an ecosystem
  - Ecosystem management practices are used to maintain biodiversity and ecosystem function
  - Migrating species affect ecosystem diversity

**Unit 5: ESI: Industrialization**

- Students will know and understand:
  - Resource availability, environmental risks, and technology drive the development of new energy sources
  - Cost affects energy resource development
  - Emissions influence energy source development, production, and use
  - Energy sources are compared using full cost accounting
  - Energy usage is dependent upon consumer choices
  - Government policies and subsidies affect energy development and impact the environment
  - Environmental regulations consider the implications of economic, environmental, individual, and societal needs
  - Individual consumers can reduce energy consumption by changing personal habits, auditing energy usage, and using government programs

## **Unit 6: ESI: Feeding the World**

- Students will know and understand:
  - A growing population demands increased agricultural production
  - Agricultural practices influence biodiversity
  - Conducting background research is important to identify what is already known about the research objective
  - Sustainable agricultural practices can protect the environment while meeting global food needs
  - Agriculturalists have responded to their effect on the environment by predicting and managing current and future impacts
  - Precision technologies can be used to manage and monitor the environment

## **Unit 7: ESI: Ag Power and Technology**

- Students will know and understand:
  - Agricultural pollutants interact with each other in complex ways
  - Ecosystems are polluted by many sources
  - The effects of pollutants are determined by the physical and chemical makeup of an ecosystem
  - Pollutants affect the health of living organisms in an ecosystem
  - Human population growth affects environmental pollution
  - Populations contribute to and are affected by pollution in different ways
  - Government policies and regulations are enacted to manage resources
  - Polluted resources cause social, economic, and scientific issues

## **Unit 8: ESI: Environmental Research Project**

- Students will know and understand:
  - Research is driven by questions and supported by literature reviews, experimentation, and communication of results
  - Background research is conducted to identify what is known about the research question
  - Environmental questions are studied using research, the scientific method, critical thinking, and problem-solving techniques
  - Results of research experiments include interpretation of data in the form of posters, papers, or oral presentations
  - The public must be informed about environmental issues before they can make decisive actions resulting in a solution

## **Unit 9: Career Exploration and Portfolio III**

- Students will be able to identify potential careers
- Students will be able to identify skills needed for their chosen careers

- Students will be able to demonstrate how to apply for a job, contact a potential employer, create a portfolio to show of known skills and how to be professional in a job interview
- Career portfolios
  - Professional requirements
    - Resume
    - Cover letter
    - Attendance for success form
    - Certificates of achievements
    - Three certificates
  - Academic artifacts
    - 36 academic achievements
      - Tests
      - Quizzes
      - Projects
  - Performance artifacts
    - 36 Practical achievements
      - Labs
      - Practical assignments

Natural Resources & Conservation/Horticultural Studies  
New Jersey Student Learning Standards

**NJ Learning Standards 9.3**

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|---|---|
| <b>CONTENT AREA:</b>  | <i>21<sup>st</sup> Century Life and Careers</i>   |
| <b>AGRICULTURE, FOOD &amp; NATURAL RESOURCES CAREER CLUSTER<sup>®</sup></b>                       |   |
| <b>Number</b>   | <b>Standard Statement</b>   |
| <i>By the end of Grade 12, Career and Technical Education Program completers will be able to:</i> |   |
| <b>CAREER CLUSTER<sup>®</sup>:</b>  | <b>AGRICULTURE, FOOD &amp; NATURAL RESOURCES (AG)</b>   |
| <b>PATHWAY:</b>   | <b>PLANT SYSTEMS (AG-PL)</b>  |
| 9.3.12.AG-PL.1  | Develop and implement a crop management plan for a given production goal that accounts for environmental factors. |
| 9.3.12.AG-PL.2  | Apply the principles of classification, plant anatomy and plant physiology to plant production and management.    |
| 9.3.12.AG-PL.3  | Propagate, culture and harvest plants and plant products based on current industry standards.                     |
| 9.3.12.AG-PL.4  | Apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape and farm). |
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