

# **Academic Credit for Career and Technical Education Coursework**

**Procedural Recommendations for Application Submissions to the  
Department of Education and State Board of Education**



Nevada Department of Education  
Office of Career Readiness, Adult Learning, and Education Options  
755 N. Roop Street, Suite 201  
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## Overview

Career and technical education (CTE) coursework may qualify for academic coursework for the purposes of high school graduation if certain provisions outlined in the Nevada Administrative Code (NAC) are properly followed. These provisions may assist students in meeting graduation requirements while simultaneously affording them more time to dedicate to their CTE program of study.

Specifically, NAC 389.672 defines the academic credits a student may earn and the procedures that must be followed by a local school district or charter school to qualify CTE courses for academic credit. With approval from the State Board of Education, a board of trustees may allow a pupil to earn the following units necessary for graduation from high school by taking CTE coursework:

- Two units of credit required in English
- One unit of credit required in mathematics
- One unit of credit required in science and
- One-half unit of credit required in health

After verification has been received by the board of trustees, the written curriculum and title of the course of study in career and technical education and a statement of the academic credit to be granted must be submitted to the State Board of Education for approval. Academic credit may be granted for the course of study in career and technical education or a combination of courses only after the State Board of Education has given its approval.

As stated above, pupils may earn up to two units of English, one unit of math, one unit of science, and one-half unit for health for aligned CTE coursework. The written curriculum must show proper alignment of the CTE course(s) with the current Nevada Academic Content Science Standards.

A pupil who earns academic credit pursuant to this section must be notified in writing that the approval for academic credit is designed to meet the requirements for graduation from high school and may not necessarily be accepted for academic credit by a specific postsecondary institution.

The alignment of CTE coursework approved for academic credit must be reviewed locally and re-approved by the State Board of Education every three (3) years, as per the requirements in NAC 389.673. A school district wishing to use the same curriculum approved for another school district may do so with approval from the State Superintendent of Public Instruction.

### **Applications may be submitted electronically to:**

Kristina Carey, Education Programs Professional  
Office of Career Readiness, Adult Learning, and Education Options  
Nevada Department of Education  
755 N. Roop Street, Suite 201  
Carson City, NV 89701  
[kcarey@doe.nv.gov](mailto:kcarey@doe.nv.gov)

## Directions for Initial Application to the State Board of Education

1. A board of trustees may allow a pupil to earn, towards the units necessary for graduation from high school, two units of the credit required in English, one unit required in mathematics, one unit required in science and one-half unit required in health if he or she is enrolled in a course of study in career and technical education approved pursuant to this section within one of the program areas set forth in subsection 1 of [NAC 389.803](#) and that course includes, as part of its curriculum, the curriculum of the required course.

**Documentation:** Letter of appointment/assignment by the superintendent or his/her designee of the teachers serving on the review committee.

2. The superintendent of the school district shall appoint a committee composed of one person certified to teach in the course of study in career and technical education and one person certified to teach in the academic area in which the credit may be earned. The committee must verify to the board of trustees that the curriculum for the course of study in career and technical education includes the curriculum of the required course of study for which a pupil may earn credit.

**Documentation:** The committee must utilize the alignment document provided in this manual for the academic content area for which the career and technical courses will earn academic credit. The alignment document must show the name(s) of the CTE courses.

3. After verification has been received by the board of trustees, the written curriculum and title of the course of study in career and technical education and a statement of the academic credit to be granted must be submitted to the State Board of Education for approval. Academic credit may be granted for the course of study in career and technical education or a combination of courses only after the State Board of Education has given its approval.

**Documentation:** Minutes from the board of trustees meeting or, in the absence of minutes, a letter from the superintendent or his/her designee verifying the approval of the board of trustees, the written curriculum, and alignment document.

4. The Superintendent of Public Instruction may give approval for the granting of academic credit to a board of trustees requesting to use a curriculum for a course of study in career and technical education that has been approved by the State Board of Education for another school district if:

- a) The procedures set forth in subsection 2 were followed by the requesting district; and
- b) The board of trustees provides assurances that it will not deviate from the curriculum that has been approved by the State Board of Education.

**Documentation:** Curriculum alignment document that shows the direct alignment of the CTE standards and any other additional learning objectives aligned to the academic standards.

5. A pupil who earns academic credit pursuant to this section must be notified that the approval for academic credit is designed to meet the requirements for graduation from high school and may not necessarily be accepted for academic credit by a specific post secondary institution. A copy of the notification given to the pupil must accompany the other materials to be submitted to the State Board of Education for final approval.

**Documentation:** A copy of the letter of notification to be issued to all students who seek academic credit for CTE coursework.

6. A minimum number of credits must be earned in the respective academic areas, as follows:
  - a) At least two credits must be earned in the academic mathematics department;
  - b) At least one credit must be earned in the academic science department; and
  - c) At least two credits must be earned in the academic English department.

## Directions for the Periodic Review and Approval of Courses:

1. The superintendent of each school district which is authorized by the State Board of Education to grant academic credit for a course of study in career and technical education pursuant to [NAC 389.672](#) shall, at least once every 3 years, appoint a committee to review that course of study. The committee must consist of one person who is certified to teach in the course of study in career and technical education and one person who is certified to teach in the academic area in which the credit may be earned.

**Documentation:** Letter of appointment/assignment by the superintendent or his/her designee of the teachers serving on the review committee.

2. After the committee has reviewed the course of study in career and technical education, it shall submit a written report of its review to the board of trustees of the school district. The report must include a statement signed by the members of the committee that the curriculum for the course of study in career and technical education includes the curriculum of the required course of study.

**Documentation:** Minutes from the board of trustees meeting or, in the absence of minutes, a letter from the superintendent or his/her designee verifying the approval of the board of trustees.

3. The board of trustees shall submit to the State Board of Education, for its approval, the written curriculum and title of the course of study in career and technical education and a statement of the academic credit it proposes to grant.

**Documentation:** Alignment document and curriculum that shows the academic standards and the CTE standards or other course content in the CTE course(s) that demonstrates the academic content is taught in the CTE course. The alignment document must show the names of the academic and CTE courses. Curriculum submissions may include, but are not limited to, a list of approved instructional materials and supplemental materials (if applicable) for the course.

4. Academic credit may be granted for the course of study in career and technical education or combination of courses only after the State Board of Education has given its approval.

## Informational Forms and Resources

- ✓ Checklist for Submitting Packet to the State Board of Education
- ✓ Curriculum Alignment Document
- ✓ Sample Student Notification
- ✓ Nevada Administrative Codes 389.672 and 389.673
- ✓ Recommended Timeline for Future Submissions

**Checklist for Application Packet to be sent to the  
State Board of Education Requesting Academic Credit for CTE course(s):**

- Submit the title of the career and technical education (CTE) course(s) and a statement of academic credit to be granted.
- Submit the letter of appointment/assignment of the committee members (at least one qualified classroom academic teacher and one qualified classroom CTE teacher).
- Submit written curriculum and alignment documents verifying the alignment of the CTE course standards with the academic standards to be taught in the CTE course(s).
- Copy of the minutes from the local Board of Trustees Meeting for State Board Approval OR a letter from school officials stating the application has been approved by the local Board of Education.
- Submit a copy of the student notification letter per NAC (Ref.389.72, Sec. 5).

# Curriculum Alignment Document

**Directions:** The curriculum must demonstrate how the CTE coursework aligns to the Nevada Academic Content Standards.

- 1) Identify the proposed academic credit (English, Math, Science, or Health)  
\*Contact the CTE office if you have questions regarding English credit.
- 2) Provide the name of the academic course (e.g., Life Science; Physical Science)
- 3) Provide the name of the CTE course(s) (e.g., Principles of Agriculture, Food, and Natural Resources and Animal Science; Biomedical I, Biomedical II, and Biomedical III)

Proposed Academic Credit (Check One)      Math      **Science**      Health

Name of Academic Course: Plant Systems - Plant Science

Name of CTE Course(s): Plant Systems

Total Number of Academic Credits: 1

Total Number of CTE Credits: 1

Classroom Academic Teacher Name: Andrew Moltz

Classroom Academic Teacher Subject: General Science Teacher

Classroom CTE Teacher Name: Jenifer Sexson

Classroom CTE Teacher Subject: Agriculture Education



# Science Standards Alignment Document

Insert the CTE Performance Indicator(s) in the right-side column which will meet the Science standard indicated in the left-side column. **Below is an example from the Principles of Agriculture, Food, and Natural Resources course.**

<i>Science: HS-Earth and Human Activity</i>	<i>CTE Performance Indicators (including text description)</i>
<i>HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</i>	<i>2.1.4 Discuss the role of modern agriculture in basic human needs by identifying products used to provide food, clothing, and shelter (e.g., world food security) (Chapter 1: The Science of Agriculture, World Food Security assignment)</i>

**Please enter appropriate/applicable alignments in the table below.**

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
<b>Science: HS-Matter and Its Interactions</b>	
HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms	0
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	0
HS-PS1-3 Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	0
HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy	<ul style="list-style-type: none"> <li>● 7.4.1 Differentiate between macronutrients and micronutrients                             <ul style="list-style-type: none"> <li>○ iCEV-Fertilizer and Soil Amendments                                     <ul style="list-style-type: none"> <li>■ <a href="#">Transcript</a>, <a href="#">Vocabulary</a>, and <a href="#">Final Assessment</a></li> </ul> </li> </ul> </li> <li>● 7.4.2 Describe pH and how it is modified                             <ul style="list-style-type: none"> <li>○ iCEV-Fertilizer and Soil Amendments                                     <ul style="list-style-type: none"> <li>■ <a href="#">Transcript</a>, <a href="#">Vocabulary</a>, and <a href="#">Final Assessment</a></li> </ul> </li> </ul> </li> <li>● 7.4.3 Describe the components of a fertilizer (e.g., nitrogen, phosphorus, potassium [NPK])                             <ul style="list-style-type: none"> <li>○ iCEV-Fertilizer and Soil Amendments                                     <ul style="list-style-type: none"> <li>■ <a href="#">Transcript</a>, <a href="#">Vocabulary</a>, and <a href="#">Final Assessment</a></li> </ul> </li> </ul> </li> </ul>
HS-PS1-5 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.	0

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
HS-PS1-5 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.	0
HS-PS1-6 Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.	0
HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	0
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	0
<b>Science: HS-Motion and Stability: Forces and Interactions</b>	
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.	0
HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.	0
HS-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision	0
HS-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision	0
HS-PS2-5 Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current	0
HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	0
<b>Science: HS-Energy</b>	

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.	0
HS-PS3-2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).	0
HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.	<ul style="list-style-type: none"> <li>● 6.4.2 Explore the major nutrients and their importance to animals               <ul style="list-style-type: none"> <li>○ iCEV: <a href="#">Advanced Livestock Nutrition</a> (slides 55-103)</li> </ul> </li> </ul>
HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).	0
HS-PS3-5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.	0
<b>Science: HS-Waves and Their Applications in Technologies on Information Transfer</b>	
HS-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	0
HS-PS4-2 Evaluate questions about the advantages of using a digital transmission and storage of information.	0
HS-PS4-3 Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.	0
HS-PS4-4 Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.	0
HS-PS4-5 Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.	0

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
<p><b>Science: HS-From Molecules to Organisms: Structures and Processes</b></p>	
<p>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.</p>	<ul style="list-style-type: none"> <li>● 6.1.1 Explain a cell’s role and compare and contrast the types of cells (prokaryotic and eukaryotic) <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 6.1.2 Analyze the components of an animal cell and explain their functions <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 6.1.3 Analyze the components of a plant cell and explain their functions <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 6.1.4 Differentiate between a plant and animal cell <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.1.1 Investigate the functions of roots in plants <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.1.4 Investigate specialized structures in roots (e.g., root tips) <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.2.1 List the functions of a stem <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.2.5 Investigate specialized structures in stems <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.3.3 List three functions of a leaf, including photosynthetic energy conversion <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.3.5 Investigate specialized cell structures in a leaf <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.4.2 Summarize the purpose of a flower <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 14.2.1 Compare the active and passive transport of minerals into the root system and throughout the plant system <ul style="list-style-type: none"> <li>○ <a href="#">Passive and Active Transport</a></li> </ul> </li> <li>● 14.2.2 Compare the structure and function of xylem and phloem cells and tissues <ul style="list-style-type: none"> <li>○ iCEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 15.1.5 Explore the structural differences between monocot and dicot plants <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> </ul>
<p>HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p>	<ul style="list-style-type: none"> <li>● 6.4.1 Identify the major parts and describe the functions of the digestive systems in livestock <ul style="list-style-type: none"> <li>○ <a href="#">Digestive System and Nutrition</a></li> </ul> </li> <li>● 7.1.1 Identify and describe the parts of a flower <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.2 Explain the purpose of a flower <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.3 Identify and describe the parts of a root <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.4 Explain the purpose of a root <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.5 Identify and describe the parts of a stem <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> </ul>

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
	<ul style="list-style-type: none"> <li>● 7.1.6 Explain the purpose of a stem <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.7 Identify and describe the parts of a leaf <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.1.8 Explain the purpose of a leaf <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.3.1 Explain the importance of plant propagation <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Plant Genetics</a></li> </ul> </li> <li>● 7.3.3 Identify and list the major parts of a seed <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.3.4 List the function of each major part of a seed <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 7.3.5 Describe and observe the process of seed germination <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 7.3.6 Describe the process of fertilization and pollination <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Plant Genetics</a></li> </ul> </li> <li>● 13.1.1 Investigate the functions of roots in plants <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.1.2 Identify the parts of a root <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.1.3 Differentiate the two major types of root systems <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.1.4 Investigate specialized structures in roots (e.g., root tips) <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.2.1 List the functions of a stem <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.2.3 Analyze the internal structures of a stem <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.2.4 Describe the difference between cell structures in monocots and dicots <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.2.5 Investigate specialized structures in stems <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.3.3 List three functions of a leaf, including photosynthetic energy conversion <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Anatomy of Plants</a></li> </ul> </li> <li>● 13.3.4 Differentiate major leaf arrangements <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.3.5 Investigate specialized cell structures in a leaf <ul style="list-style-type: none"> <li>○ iCEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.4.2 Summarize the purpose of a flower</li> </ul>

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	<ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> <li>● 13.4.3 Distinguish between different types of flowers <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 13.4.5 Diagram the process of plant fertilization <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 14.2.1 Compare the active and passive transport of minerals into the root system and throughout the plant system <ul style="list-style-type: none"> <li>○ <a href="#">Passive and Active Transport</a></li> </ul> </li> <li>● 14.2.2 Compare the structure and function of xylem and phloem cells and tissues <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 15.1.5 Explore the structural differences between monocot and dicot plants <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 17.2.1 Correlate plant symptoms to the appropriate nutritional deficiency (e.g., nitrogen deficiency, yellowing leaves) <ul style="list-style-type: none"> <li>○ <a href="#">Essential Nutrients and Their Roles</a></li> </ul> </li> <li>● 17.2.2 Correlate plant symptoms to the appropriate plant toxicity (e.g., fertilizer burn, leaf tip burn) <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Irrigation Water Quality</a></li> </ul> </li> <li>● 19.2.1 Summarize optimum conditions for asexual propagation <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 19.2.2 Demonstrate or model techniques used to propagate plants by cutting <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 19.2.3 Demonstrate or model techniques used to propagate plants by division <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 19.2.4 Demonstrate or model techniques used to propagate plants by separation <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 19.2.5 Demonstrate or model techniques used to propagate plants by layering <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 20.2.1 Compare and contrast hard and soft pinches while using best management practices <ul style="list-style-type: none"> <li>○ <a href="#">Controlling Growth of Mums</a></li> </ul> </li> <li>● 20.2.2 Pinch plants using best management practices <ul style="list-style-type: none"> <li>○ <a href="#">Controlling Growth of Mums</a></li> </ul> </li> <li>● 20.3.1 Identify the proper stage of plant growth for transplanting <ul style="list-style-type: none"> <li>○ <a href="#">Transplanting Seedlings</a></li> </ul> </li> </ul>
<p>HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>	<ul style="list-style-type: none"> <li>● 14.3.1 Examine the effects of light quality on plant growth (e.g., spectrum, foot candles) <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> </ul>

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	<ul style="list-style-type: none"> <li>● 14.3.2 Examine the effects of water quality on plant growth (e.g., pH, hardness) <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Irrigation Water Quality</a></li> </ul> </li> <li>● 14.3.3 Examine the effects of temperature on plant growth <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.4.1 Compare the functions of plant hormones <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.4.2 Examine commercial uses for plant growth regulators <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.5.1 Investigate plant tropisms (e.g., gravi-, hydro-, photo-, thigmo-) <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Plant Nutrition Lesson (PPT and Lesson Plan)</a></li> </ul> </li> <li>● 17.1.4 Develop a fertilizer management plan for a greenhouse crop <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fertilizer and Soil Amendments</a> <ul style="list-style-type: none"> <li>■ <a href="#">Transcript, Vocabulary, and Final Assessment</a></li> </ul> </li> </ul> </li> <li>● 17.1.5 Discuss the importance of minerals to plant nutrition (e.g., cation exchange) <ul style="list-style-type: none"> <li>○ <a href="#">Soil Chemistry</a></li> </ul> </li> <li>● 17.2.1 Correlate plant symptoms to the appropriate nutritional deficiency (e.g., nitrogen deficiency, yellowing leaves) <ul style="list-style-type: none"> <li>○ <a href="#">Essential Nutrients and Their Roles</a></li> </ul> </li> <li>● 17.2.2 Correlate plant symptoms to the appropriate plant toxicity (e.g., fertilizer burn, leaf tip burn) <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Irrigation Water Quality</a></li> </ul> </li> <li>● 19.1.2 Identify the conditions needed for seed germination <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fundamental Plant Processes</a></li> </ul> </li> <li>● 19.1.3 Compare the methods of seed preparation <ul style="list-style-type: none"> <li>○ <a href="#">Seed Germination</a></li> </ul> </li> <li>● 19.1.4 Demonstrate techniques for sowing seeds <ul style="list-style-type: none"> <li>○ <a href="#">Seed Planting 101 Lesson</a></li> </ul> </li> <li>● 20.2.4 Develop a plant lighting schedule for a greenhouse crop <ul style="list-style-type: none"> <li>○ <a href="#">Light and Plants</a></li> </ul> </li> <li>● 20.2.5 Develop a fertilizer schedule for a greenhouse crop <ul style="list-style-type: none"> <li>○ <a href="#">iCEV-Fertilizer and Soil Amendments</a> <ul style="list-style-type: none"> <li>■ <a href="#">Transcript, Vocabulary, and Final Assessment</a></li> </ul> </li> </ul> </li> <li>● 20.3.1 Identify the proper stage of plant growth for transplanting <ul style="list-style-type: none"> <li>○ <a href="#">Transplanting Seedlings</a></li> </ul> </li> <li>● 20.3.2 Select appropriate plants for transplanting <ul style="list-style-type: none"> <li>○ <a href="#">Transplanting Seedlings</a></li> </ul> </li> <li>● 20.4.1 Compare hardening processes <ul style="list-style-type: none"> <li>○ <a href="#">Hardening Transplants</a></li> </ul> </li> <li>● 20.4.2 Prepare plants for sale using best management practices <ul style="list-style-type: none"> <li>○ <a href="#">Best Practices for Plant Sales Resource</a></li> </ul> </li> </ul>

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
HS-LS1-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	<ul style="list-style-type: none"> <li>● 22.1.4 Describe sex determination, linkage, crossover, and mutation               <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> </ul>
HS-LS1-5 Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	<ul style="list-style-type: none"> <li>● 7.2.1 Describe the process of photosynthesis               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.1.1 Interpret the process of photosynthesis               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> </ul>
HS-LS1-6 Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	<ul style="list-style-type: none"> <li>● 14.1.2 Interpret the process of cellular respiration               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.1.3 Compare the process of cellular respiration to photosynthesis               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> </ul>
HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.	<ul style="list-style-type: none"> <li>● 7.2.2 Describe the process of cellular respiration               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 7.2.3 Explain the relationship between photosynthesis and respiration               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 7.2.4 Summarize why photosynthesis and respiration are important to human beings               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> <li>● 14.1.2 Interpret the process of cellular respiration               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> </ul>
<b>Science: HS-Ecosystems: Interactions, Energy, and Dynamics</b>	
HS-LS2-1 Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.	<ul style="list-style-type: none"> <li>● 13.4.4 Describe the difference between monocot and dicot flowers               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> </ul>
HS-LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	<ul style="list-style-type: none"> <li>● 13.4.4 Describe the difference between monocot and dicot flowers               <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Scientific Classification &amp; Nomenclature of Plants Lesson</a></li> </ul> </li> <li>● 15.1.1 Correctly categorize common plants by life cycle (e.g., annuals, perennials, etc.)               <ul style="list-style-type: none"> <li>○ <a href="#">Classifying and Naming Plants</a></li> </ul> </li> <li>● 15.1.2 Correctly categorize plants by growth habits (e.g., mounding, trailing, etc.)               <ul style="list-style-type: none"> <li>○ <a href="#">Plant Classification Lesson Plan</a></li> </ul> </li> </ul>
HS-LS2-3 Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	0
HS-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	<ul style="list-style-type: none"> <li>● 11.4.4 Diagram and explain the nitrogen, phosphorus, carbon, and water cycle               <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Groundwater Systems</a></li> </ul> </li> <li>● 14.1.3 Compare the process of cellular respiration to photosynthesis</li> </ul>



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	<ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul>
<p>HS-LS2-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.</p>	<ul style="list-style-type: none"> <li>● 11.4.4 Diagram and explain the nitrogen, phosphorus, carbon, and water cycle <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Groundwater Systems</a></li> </ul> </li> <li>● 14.1.3 Compare the process of cellular respiration to photosynthesis <ul style="list-style-type: none"> <li>○ ICEV-<a href="#">Fundamental Plant Processes</a></li> </ul> </li> </ul>
<p>HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p>	<ul style="list-style-type: none"> <li>● 11.4.3 Identify biomes and explain ecosystem diversity <ul style="list-style-type: none"> <li>○ <a href="#">Biodiversity</a></li> </ul> </li> <li>● 18.1.2 Summarize the benefits of IPM <ul style="list-style-type: none"> <li>○ <a href="#">Using IPM for Greenhouse Production</a></li> </ul> </li> <li>● 18.2.3 Differentiate between infectious and noninfectious diseases <ul style="list-style-type: none"> <li>○ <a href="#">Plant Diseases</a></li> </ul> </li> <li>● 18.2.4 Design an ongoing plan for pest management and prevention <ul style="list-style-type: none"> <li>○ <a href="#">Using IPM for Greenhouse Production</a></li> </ul> </li> </ul>
<p>HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.</p>	<ul style="list-style-type: none"> <li>● 11.2.1 Recognize how humans use natural resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.2.2 Identify the urban and rural impacts of natural resource use <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.2.3 Analyze the impact of recycling and reusing resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.4.3 Identify biomes and explain ecosystem diversity <ul style="list-style-type: none"> <li>○ <a href="#">Biodiversity</a></li> </ul> </li> <li>● 18.3.4 Evaluate environmental and consumer concerns regarding pest management and biodiversity <ul style="list-style-type: none"> <li>○ <a href="#">Pesticides: Environmental Impacts and Management Strategies</a></li> </ul> </li> </ul>
<p>HS-LS2-8 Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.</p>	<ul style="list-style-type: none"> <li>● 11.4.2 Explain natural selection and succession <ul style="list-style-type: none"> <li>○ <a href="#">Natural Selection</a></li> </ul> </li> </ul>
<p><b>Science: HS-Heredit: Inheritance and Variation of Traits</b></p>	
<p>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.</p>	<ul style="list-style-type: none"> <li>● 11.4.2 Explain natural selection and succession <ul style="list-style-type: none"> <li>○ <a href="#">Natural Selection</a></li> </ul> </li> <li>● 22.1.1 Describe the selective plant breeding process <ul style="list-style-type: none"> <li>○ <a href="#">Propagation of Plants</a></li> </ul> </li> <li>● 22.3.1 Define micropropagation and its importance <ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> </ul> </li> <li>● 22.3.2 Explain applications of micropropagation <ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> </ul> </li> <li>● 22.3.3 Describe procedures used in micropropagation <ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> </ul> </li> </ul>

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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.	<ul style="list-style-type: none"> <li>● 11.4.2 Explain natural selection and succession <ul style="list-style-type: none"> <li>○ <a href="#">Natural Selection</a></li> </ul> </li> <li>● 22.1.1 Describe the selective plant breeding process <ul style="list-style-type: none"> <li>○ <a href="#">Propagation of Plants</a></li> </ul> </li> </ul>
HS-LS3-3 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population	<ul style="list-style-type: none"> <li>● 22.1.2 Explain how to estimate the heritability of certain traits <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 22.1.3 Predict the genotypes and phenotypes from monohybrid and dihybrid crosses using a Punnett Square <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 22.1.4 Describe sex determination, linkage, crossover, and mutation <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 22.2.1 Explain the advantages and disadvantages for genetic manipulation of plants <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> <li>● 22.2.2 Investigate transgenic plants on the market (e.g., hybrids, genetically modified organisms) <ul style="list-style-type: none"> <li>○ <a href="#">Using Biotechnology to Improve Plant Production and Quality</a></li> </ul> </li> </ul>
<b>Science: HS-Biological Evolution: Unity and Diversity</b>	
HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.	0
HS-LS4-2 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	<ul style="list-style-type: none"> <li>● 22.2.1 Explain the advantages and disadvantages for genetic manipulation of plants <ul style="list-style-type: none"> <li>○ ICEV- <a href="#">Plant Genetics</a></li> </ul> </li> </ul>
HS-LS4-3 Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	0
HS-LS4-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	<ul style="list-style-type: none"> <li>● 11.4.2 Explain natural selection and succession <ul style="list-style-type: none"> <li>○ <a href="#">Natural Selection</a></li> </ul> </li> </ul>
HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	<ul style="list-style-type: none"> <li>● 18.3.4 Evaluate environmental and consumer concerns regarding pest management and biodiversity <ul style="list-style-type: none"> <li>○ <a href="#">Pesticides: Environmental Impacts and Management Strategies</a></li> </ul> </li> </ul>
HS-LS4-6 Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity	<ul style="list-style-type: none"> <li>● 22.3.1 Define micropropagation and its importance <ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> </ul> </li> <li>● 22.3.2 Explain applications of micropropagation</li> </ul>

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	<ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> <li>● 22.3.3 Describe procedures used in micropropagation               <ul style="list-style-type: none"> <li>○ <a href="#">Tissue Culture Lesson Plan</a></li> </ul> </li> <li>● 22.4.1 Define hydroponics and its importance to society               <ul style="list-style-type: none"> <li>○ <a href="#">Hydroponics Lesson Plan</a></li> </ul> </li> <li>● 22.4.2 Explain applications of hydroponics and determine costs and benefits               <ul style="list-style-type: none"> <li>○ <a href="#">Hydroponics Lesson Plan</a></li> </ul> </li> <li>● 22.4.3 Describe procedures used in hydroponic plant production               <ul style="list-style-type: none"> <li>○ <a href="#">Hydroponics Lesson Plan</a></li> </ul> </li> <li>● 22.4.4 Design and implement a hydroponic system               <ul style="list-style-type: none"> <li>○ <a href="#">Hydroponics Lesson Plan</a></li> </ul> </li> <li>● 22.4.5 Analyze the efficiency of implemented hydroponic system designs               <ul style="list-style-type: none"> <li>○ <a href="#">Hydroponics Lesson Plan</a></li> </ul> </li> </ul>
<b>Science: HS-Earth’s Place in the Universe</b>	
HS-ESS1-1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun’s core to release energy that eventually reaches Earth in the form of radiation.	0
HS-ESS1-2 Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	0
HS-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements.	0
HS-ESS1-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	0
HS-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.	0
HS-ESS1-6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth’s formation and early history.	0
<b>Science: HS-Earth’s Systems</b>	
HS-ESS2-1 Develop a model to illustrate how Earth’s internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.	0

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
HS-ESS2-2 Analyze geoscience data to make the claim that one change to Earth’s surface can create feedbacks that cause changes to other Earth systems.	<ul style="list-style-type: none"> <li>● 8.1.4 Identify various soil structures, their formation, and importance in agriculture production <ul style="list-style-type: none"> <li>○ <a href="#">Soil Texture and Structure</a></li> </ul> </li> <li>● 11.5.3 Identify Nevada’s ecoregions (Sierra Nevada, Northern Basin and Range, Central Basin and Range, and Mojave Basin and Range) <ul style="list-style-type: none"> <li>○ <a href="#">Biodiversity</a></li> </ul> </li> </ul>
HS-ESS2-3 Develop a model based on evidence of Earth’s interior to describe the cycling of matter by thermal convection.	0
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.	0
HS-ESS2-5 Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.	<ul style="list-style-type: none"> <li>● 11.4.4 Diagram and explain the nitrogen, phosphorus, carbon, and water cycle <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Groundwater Systems</a></li> </ul> </li> </ul>
HS-ESS2-6 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	<ul style="list-style-type: none"> <li>● 11.4.4 Diagram and explain the nitrogen, phosphorus, carbon, and water cycle <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Groundwater Systems</a></li> </ul> </li> </ul>
HS-ESS2-7 Construct an argument based on evidence about the simultaneous coevolution of Earth’s systems and life on Earth.	<ul style="list-style-type: none"> <li>● 16.1.2 Describe the concept of soil texture and its importance <ul style="list-style-type: none"> <li>○ <a href="#">Soil Texture and Structure</a></li> </ul> </li> <li>● 16.1.3 Classify the texture of a soil sample (e.g., texture triangle) <ul style="list-style-type: none"> <li>○ <a href="#">Soil Texture and Structure</a></li> </ul> </li> <li>● 16.1.4 Identify various soil structures, their formation, and importance in agriculture production <ul style="list-style-type: none"> <li>○ <a href="#">Soil Texture and Structure</a></li> </ul> </li> </ul>
<b>Science: HS-Earth and Human Activity</b>	
HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	<ul style="list-style-type: none"> <li>● 2.1.1 Assess how agriculture supports daily life <ul style="list-style-type: none"> <li>○ <a href="#">A Day In The Life Lesson Plan</a></li> </ul> </li> <li>● 2.1.2 Describe the importance and value of global agricultural trade <ul style="list-style-type: none"> <li>○ <a href="#">Ag Issues In WTO Trade Negotiations</a></li> </ul> </li> <li>● 2.1.4 Discuss the role of modern agriculture in basic human needs by identifying products used to provide food, clothing, and shelter (e.g., world food security) <ul style="list-style-type: none"> <li>○ <a href="#">World Hunger, A Growing Concern</a></li> </ul> </li> <li>● 2.2.1 Compare agriculture’s role in developing civilizations <ul style="list-style-type: none"> <li>○ <a href="#">Trends in Agriculture</a></li> </ul> </li> <li>● 11.2.2 Identify the urban and rural impacts of natural resource use <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> </ul>

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<p>HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>	<ul style="list-style-type: none"> <li>● 11.1.2 Distinguish between renewable and nonrenewable resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.1.3 Compare the difference between inexhaustible and exhaustible resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.2.3 Analyze the impact of recycling and reusing resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 16.2.4 Evaluate the advantages and disadvantages of soilless media <ul style="list-style-type: none"> <li>○ <a href="#">Managing Greenhouse Micronutrients</a></li> </ul> </li> <li>● 16.3.4 Interpret electrical conductivity test results of a growing media sample <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> <li>● 16.3.5 Interpret soil test results and make recommendation(s) <ul style="list-style-type: none"> <li>○ <a href="#">Interpreting Your Soil Test Reports</a></li> </ul> </li> <li>● 17.1.4 Develop a fertilizer management plan for a greenhouse crop <ul style="list-style-type: none"> <li>○ <a href="#">Fertilizer Formulations</a></li> </ul> </li> </ul>
<p>HS-ESS3-3 Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.</p>	<ul style="list-style-type: none"> <li>● 11.2.1 Recognize how humans use natural resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> </ul>
<p>HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.</p>	<ul style="list-style-type: none"> <li>● 11.2.3 Analyze the impact of recycling and reusing resources <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resources</a></li> </ul> </li> <li>● 11.3.1 Compare and contrast conservation and preservation <ul style="list-style-type: none"> <li>○ <a href="#">Natural Resource Conservation</a></li> </ul> </li> <li>● 16.2.2 Describe the functions of growing media <ul style="list-style-type: none"> <li>○ <a href="#">Managing Greenhouse Micronutrients</a></li> </ul> </li> <li>● 16.2.3 Determine desirable properties of growing media (e.g., drainage, organic matter, microorganisms, water holding capacity and permeability) <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> </ul>
<p>HS-ESS3-5 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.</p>	<ul style="list-style-type: none"> <li>● 16.3.1 Test and determine pH level of various growing media <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> <li>● 16.3.2 Interpret pH test results of a growing media sample <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> <li>● 16.3.3 Test and determine the electrical conductivity of various growing media <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> </ul>

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
	<ul style="list-style-type: none"> <li>● 16.3.4 Interpret electrical conductivity test results of a growing media sample               <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Properties of Growing Media</a></li> </ul> </li> <li>● 16.3.5 Interpret soil test results and make recommendation(s)               <ul style="list-style-type: none"> <li>○ <a href="#">Interpreting Your Soil Test Reports</a></li> </ul> </li> </ul>
<p>HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.</p>	<ul style="list-style-type: none"> <li>● 17.1.1 Identify the components of a fertilizer and their role in the biochemical cycle               <ul style="list-style-type: none"> <li>○ <a href="#">Fertilizer Formulations</a></li> </ul> </li> <li>● 17.1.4 Develop a fertilizer management plan for a greenhouse crop               <ul style="list-style-type: none"> <li>○ <a href="#">Fertilizer Formulations</a></li> </ul> </li> <li>● 17.1.5 Discuss the importance of minerals to plant nutrition (e.g., cation exchange)               <ul style="list-style-type: none"> <li>○ <a href="#">Soil Chemistry</a></li> </ul> </li> <li>● 17.2.1 Correlate plant symptoms to the appropriate nutritional deficiency (e.g., nitrogen deficiency, yellowing leaves)               <ul style="list-style-type: none"> <li>○ <a href="#">Essential Nutrients and Their Roles</a></li> </ul> </li> <li>● 17.2.2 Correlate plant symptoms to the appropriate plant toxicity (e.g., fertilizer burn, leaf tip burn)               <ul style="list-style-type: none"> <li>○ <a href="#">Understanding Irrigation Water Quality</a></li> </ul> </li> </ul>
<p><b>Science: HS-Engineering Design</b></p>	
<p>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.</p>	<ul style="list-style-type: none"> <li>● 2.1.3 Describe the various components of the agriculture industry (e.g., value chain)               <ul style="list-style-type: none"> <li>○ <a href="#">National FFA Organization World Hunger: A Growing Concern Lesson 1</a></li> </ul> </li> <li>● 2.3.1 Analyze the impact of agriculture on the local, state, national, and world economies               <ul style="list-style-type: none"> <li>○ <a href="#">Government Agencies Lesson</a></li> </ul> </li> <li>● 2.3.2 Explain the role of government in the world's food supply               <ul style="list-style-type: none"> <li>○ <a href="#">Government Agencies Lesson</a></li> </ul> </li> <li>● 16.2.4 Evaluate the advantages and disadvantages of soilless media               <ul style="list-style-type: none"> <li>○ <a href="#">Managing Greenhouse Micronutrients</a></li> </ul> </li> </ul>
<p>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.</p>	<ul style="list-style-type: none"> <li>● 2.1.5 Discuss the role of diverse cultures in developing American agriculture practices               <ul style="list-style-type: none"> <li>○ <a href="#">Trends in Agriculture</a></li> </ul> </li> <li>● 2.2.2 Organize the major technological developments that have occurred in agriculture               <ul style="list-style-type: none"> <li>○ <a href="#">National FFA Organization</a></li> </ul> </li> <li>● 2.2.3 Interpret historical events and trends that have led to the development of today's agriculture industry               <ul style="list-style-type: none"> <li>○ <a href="#">National FFA Organization</a></li> </ul> </li> <li>● 16.2.4 Evaluate the advantages and disadvantages of soilless media               <ul style="list-style-type: none"> <li>○ <a href="#">Managing Greenhouse Micronutrients</a></li> </ul> </li> </ul>

Nevada Academic Science Standards (DCI)	CTE Performance Indicators (including text description)
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.	0
HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.	0
<b>Total number of unique Science Standards addressed:</b>	<b>36</b>
<b>Total number of unique CTE Standards aligned:</b>	<b>126</b>

## Student Notification / Sample Letter for District Use

Dear Parent/Guardian of:

Your son/daughter is enrolled in the career and technical education (CTE) program of study that qualifies for academic credit. By successfully completing the CTE coursework, he/she may earn up to \_\_\_\_\_ credit in the academic area of \_\_\_\_\_.

Please note that while the academic credit earned through CTE coursework is designed to meet the requirements for high school graduation, the academic credit may not necessarily be accepted for academic credit by a specific postsecondary institution.

Sincerely,

**Signature**

**Printed Name**

## NEVADA ADMINISTRATIVE CODES 389.672 AND 389.673

**NAC 389.672 Academic credit for a course of study in career and technical education: Limitations and prerequisites.** ([NRS 385.080](#), [385.110](#), [388.360](#))

1. A board of trustees may allow a pupil to earn, towards the units necessary for graduation from high school, two units of the credit required in English, one unit required in mathematics, one unit required in science and one-half unit required in health if he or she is enrolled in a course of study in career and technical education approved pursuant to this section within one of the program areas set forth in subsection 1 of [NAC 389.803](#) and that course includes, as part of its curriculum, the curriculum of the required course.
2. The superintendent of the school district shall appoint a committee composed of one person certified to teach in the course of study in career and technical education and one person certified to teach in the academic area in which the credit may be earned. The committee must verify to the board of trustees that the curriculum for the course of study in career and technical education includes the curriculum of the required course of study for which a pupil may earn credit.
3. After verification has been received by the board of trustees, the written curriculum and title of the course of study in career and technical education and a statement of the academic credit to be granted must be submitted to the State Board of Education for approval. Academic credit may be granted for the course of study in career and technical education or a combination of courses only after the State Board of Education has given its approval.
4. The Superintendent of Public Instruction may give approval for the granting of academic credit to a board of trustees requesting to use a curriculum for a course of study in career and technical education that has been approved by the State Board of Education for another school district if:
  - (a) The procedures set forth in subsection 2 were followed by the requesting district; and
  - (b) The board of trustees provides assurances that it will not deviate from the curriculum that has been approved by the State Board of Education.
5. A pupil who earns academic credit pursuant to this section must be notified that the approval for academic credit is designed to meet the requirements for graduation from high school and may not necessarily be accepted for academic credit by a specific postsecondary institution. A copy of the notification given to the pupil must accompany the other materials to be submitted to the State Board of Education for final approval.
6. A minimum number of credits must be earned in the respective academic areas, as follows:
  - (a) At least two credits must be earned in the academic mathematics department;
  - (b) At least one credit must be earned in the academic science department; and
  - (c) At least two credits must be earned in the academic English department.

(Added to NAC by Bd. of Education, eff. 5-4-87; A by Bd. for Occupational Education, 3-27-92; 11-17-95; A by Bd. of Education by R069-97, 12-10-97, eff. 9-1-99; R155-01, 12-17-2001; R195-01, 4-1-2002; R165-03, R166-03, R184-03 & R185-03, 1-22-2004; R236-03, 3-19-2004; A by Bd. for Career & Tech. Educ. by R172-05, 2-23-2006; A by Bd. of Education by R132-10, 12-16-2010; A by R087-12, 11-1-2012)



**NAC 389.673 Academic credit for courses of study in career and technical education: Periodic review and approval of each course. ([NRS 385.080](#), [385.110](#), [388.360](#))**

1. The superintendent of each school district which is authorized by the State Board of Education to grant academic credit for a course of study in career and technical education pursuant to [NAC 389.672](#) shall, at least once every 3 years, appoint a committee to review that course of study. The committee must consist of one person who is certified to teach in the course of study in career and technical education and one person who is certified to teach in the academic area in which the credit may be earned.
2. After the committee has reviewed the course of study in career and technical education, it shall submit a written report of its review to the board of trustees of the school district. The report must include a statement signed by the members of the committee that the curriculum for the course of study in career and technical education includes the curriculum of the required course of study.
3. The board of trustees shall submit to the State Board of Education, for its approval, the written curriculum and title of the course of study in career and technical education and a statement of the academic credit it proposes to grant.
4. Academic credit may be granted for the course of study in career and technical education or combination of courses only after the State Board of Education has given its approval.

(Added to NAC by Bd. of Education by R069-97, 12-10-97, eff. 9-1-99; A by R087-12, 11-1-2012)

## Suggested Timeline for CTE Course Academic Approval by the State Board of Education

Activity	Timeline
School district leadership will determine eligible CTE courses for academic credit.	October/November
The local school district will form a committee composed of at least one person certified to teach the CTE course(s) and one person certified to teach the academic area to verify to the board of trustees that the curriculum for the CTE course(s) includes the curriculum for the academic subject.	December/January
Upon approval by the local school district board of trustees, all materials must be submitted to the Department of Education with a request for submission to the State Board of Education for new course approval or to the Superintendent of Public Instruction for approval to use courses already approved by the State Board of Education.	February, March, April, May
The State Board of Education approves CTE coursework and notifies the local board of trustees in each school district that applies for academic credit; a letter must be sent by the local school district informing the pupil who earns academic credit pursuant to this section that the approval for academic credit is designed to meet the requirements for graduation from high School and may not necessarily be accepted for academic credit by a specified postsecondary institution. A copy of the notification given to the pupil must accompany the other materials to be submitted to the State Board of Education for final approval.	June/July
The Office of Career Readiness, Adult Learning, and Education Options will send a letter of approval to the school district upon approval by the State Board of Education or the Superintendent of Public Instruction ONLY to school districts who apply according to Section 4 of NAC 389.672.	July/August
The Nevada System of Higher Education will distribute the statewide course list to verify that the qualifying CTE course(s) submitted by the school district were properly approved according to the regulations.	Annually
The local school district must review and renew each course that qualifies for academic credit to include State Board of Education approval of the course to be renewed.	Every Three (3) Years