

***BIOTECHNOLOGY***  
***CURRICULUM FRAMEWORK***



This document was prepared by:

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**VISION**

*All Nevadans ready for success in the 21st century*

**MISSION**

*To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence*



## INTRODUCTION

The Nevada CTE Curriculum Frameworks are a resource for Nevada’s public and charter schools to design, implement, and assess their CTE programs and curriculum. The content standards identified in this document are listed as a model for the development of local district programs and curriculum. They represent rigorous and relevant expectations for student performance, knowledge, and skill attainment which have been validated by industry representatives.

The intent of this document is to provide a resource to districts as they develop and implement CTE programs and curricula.

This program ensures the following thresholds are met:

- The CTE course and course sequence teaches the knowledge and skills required by industry through applied learning methodology and, where appropriate, work-based learning experiences that prepare students for careers in high-wage, high-skill and/or high-demand fields. Regional and state economic development priorities shall play an important role in determining program approval. Some courses also provide instruction focused on personal development.
- The CTE course and course sequence includes leadership and employability skills as an integral part of the curriculum.
- The CTE course and course sequence is part of a rigorous program of study and includes sufficient technical challenge to meet state and/or industry-standards.

The CTE program components include the following items:

- Program of Study
- State Skill Standards
- Employability Skills for Career Readiness Standards
- Career Technical Student Organizations (CTSOs)
- Curriculum Framework
- CTE Assessments:
  - Workplace Readiness Skills Assessment
  - End-of-Program Technical Assessment
- Certificate of Skill Attainment
- CTE Endorsement on a High School Diploma
- CTE College Credit

**NEVADA DEPARTMENT OF EDUCATION**  
**CURRICULUM FRAMEWORK FOR**  
**BIOTECHNOLOGY**

**PROGRAM INFORMATION**

<b>Program Title:</b>	<b>Biotechnology</b>
<b>State Skill Standards:</b>	<b>Biotechnology</b>
<b>Standards Reference Code:</b>	<b>BIOT</b>
<b>Career Cluster:</b>	<b>Agriculture, Food and Natural Resources</b>
<b>Career Pathway:</b>	<b>Animal &amp; Plant Systems</b>
<b>Program Length:</b>	<b>3 Levels (L1, L2, L3c)</b>
<b>Program Assessments:</b>	<b>Biotechnology</b> <b>Workplace Readiness Skills</b>
<b>CTSO:</b>	<b>FFA</b>
<b>Grade Level:</b>	<b>9-12</b>
<b>Industry Certifications:</b>	<b>See Nevada's Approved Certification Listing</b>

**PROGRAM PURPOSE**

The purpose of this program is to prepare students for postsecondary education and employment in the Biotechnology industry.

The program includes the following state standards:

- Nevada CTE Skill Standards: Biotechnology
- Employability Skills for Career Readiness
- Nevada Academic Content Standards (alignment shown in the Nevada CTE Skill Standards):
  - Science (based on the Nevada Academic Content Standards for Science)
  - English Language Arts (based on the Common Core State Standards)
  - Mathematics (based on the Common Core State Standards)
- Common Career Technical Core (alignment shown in the Nevada CTE Skill Standards)

**CAREER CLUSTERS**

The National Career Clusters™ Framework provides a vital structure for organizing and delivering quality CTE programs through learning and comprehensive programs of study (POS). In total, there are 16 Career Clusters in the National Career Clusters™ Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career. As an organizing tool for curriculum design and instruction, Career Clusters™ provide the essential knowledge and skills for the 16 Career Clusters™ and their Career Pathways.\*

\*Cite: National Association of State Directors of Career Technical Education Consortium. (2012). Retrieved from <http://www.careertech.org/career-clusters/glance/careerclusters.html>

**PROGRAM OF STUDY**

The program of study illustrates the sequence of academic and career and technical education coursework that is necessary for the student to successfully transition into postsecondary educational opportunities and employment in their chosen career path. (NAC 389.803)

**PROGRAM STRUCTURE**

The core course sequencing provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. Complete program sequences are essential for the successful delivery of all state standards in each program area.

**BIOTECHNOLOGY**  
**Core Course Sequence**

<b>COURSE NAME</b>	<b>LEVEL</b>
Agriculture Science I	L1
Agriculture Science II	L2
Biotechnology	L3C

The core course sequencing with the complementary courses provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. A program does not have to utilize all of the complementary courses in order for their students to complete their program of study. Complete program sequences are essential for the successful delivery of all state standards in each program area.

**BIOTECHNOLOGY**  
**Core Course Sequence with Complementary Courses**

<b>COURSE NAME</b>	<b>LEVEL</b>
Agriculture Science I	L1
Agriculture Science II	L2
Biotechnology	L3C
Biotechnology Advanced Studies*	AS

\*Complementary Courses

**STATE SKILL STANDARDS**

The state skill standards are designed to clearly state what the student should know and be able to do upon completion of an advanced high school career and technical education (CTE) program. The standards are designed for the student to complete all standards through their completion of a program of study. The standards are designed to prepare the student for the end-of-program technical assessment directly aligned to the standards. (Paragraph (a) of Subsection 1 of NAC 389.800)

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**

Employability skills, often referred to as “soft skills,” have for many years been a recognizable component of the standards and curriculum in career and technical education programs. The twenty-one standards are organized into three areas: (1) Personal Qualities and People Skills; (2) Professional Knowledge and Skills; and (3) Technology Knowledge and Skills. The standards are designed to ensure students graduate high school properly prepared with skills employers prioritize as the most important. Instruction on all twenty-one standards must be part of each course of the CTE program. (Paragraph (d) of Subsection 1 of NAC 389.800)

**CURRICULUM FRAMEWORK**

The Nevada CTE Curriculum Frameworks are organized utilizing the recommended course sequencing listed in the program of study and the CTE Course Catalog. The framework identifies the recommended content standards, performance standards, and performance indicators that should be taught in each course.

**CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOs)**

To further the development of leadership and technical skills, students must have opportunities to participate in one or more of the Career and Technical Student Organizations (CTSOs). CTSOs develop character, citizenship, and the technical, leadership and teamwork skills essential for the workforce and their further education. Their activities are considered a part of the instructional day when they are directly related to the competencies and objectives in the course. (Paragraph (a) of Subsection 3 of NAC 389.800)

**WORKPLACE READINESS SKILLS ASSESSMENT**

The Workplace Readiness Skills Assessment has been developed to align with the Nevada CTE Employability Skills for Career Readiness Standards. This assessment provides a measurement of student employability skills attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified by the letter “C”. (e.g., Level = L3C) (Paragraph (d) of Subsection 1 of NAC 389.800)

**END-OF-PROGRAM TECHNICAL ASSESSMENT**

An end-of-program technical assessment has been developed to align with the Nevada CTE Skill Standards for this program. This assessment provides a measurement of student technical skill attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified by the letter “C”. (e.g., Level = L3C) (Paragraph (e) of Subsection 1 of NAC 389.800)

**CERTIFICATE OF SKILL ATTAINMENT**

Each student who completes a course of study must be awarded a certificate which states that they have attained specific skills in the industry being studied and meets the following criteria: A student must maintain a 3.0 grade point average in their approved course of study, pass the Workplace Readiness Skills Assessment, and pass the end-of-program technical assessment. (Subsection 4 of NAC 389.800)

**CTE ENDORSEMENT ON A HIGH SCHOOL DIPLOMA**

A student qualifies for a CTE endorsement on their high school diploma after successfully completing the following criteria: 1) completion of a CTE course of study in a program area, 2) completion of academic requirements governing receipt of a standard diploma, and 3) meet all requirements for the issuance of the Certificate of Skill Attainment. (NAC 389.815)

**CTE COLLEGE CREDIT**

CTE College Credit is awarded to students based on articulation agreements established by each college for the CTE program, where the colleges will determine the credit value of a full high school CTE program based on course alignment. An articulation agreement will be established for each CTE program designating the number of articulated credits each college will award to students who complete the program.

CTE College Credit is awarded to students who: (1) complete the CTE course sequence with a grade-point average of 3.0 or higher; (2) pass the state end-of-program technical assessment for the program; and (3) pass the Workplace Readiness Assessment for employability skills.

Pre-existing articulation agreements will be recognized until new agreements are established according to current state policy and the criteria shown above.

Please refer to the local high school's course catalog or contact the local high school counselor for more information. (Paragraph (b) of Subsection 3 of NAC 389.800)

**ACADEMIC CREDIT FOR CTE COURSEWORK**

Career and technical education courses meet the credit requirements for high school graduation (1 unit of arts and humanities or career and technical education). Some career and technical education courses meet academic credit for high school graduation. Please refer to the local high school's course catalog or contact the local high school counselor for more information. (NAC 389.672)

**CORE COURSE:****RECOMMENDED STUDENT PERFORMANCE STANDARDS****COURSE INFORMATION:****COURSE TITLE: Agriculture Science I****ABBR. NAME: AG SCIENCE I****CREDITS: 1****LEVEL: L1****CIP CODE: 01.0000****PREREQUISITE: NONE****CTSO: FFA****COURSE DESCRIPTION:**

This course is an introduction and survey course of the many career areas in agriculture. Topics include scientific investigations in agriculture, basic animal science, basic plant and soil science, ornamental horticulture, natural resource management, business management, leadership and communication through FFA, and career skills. An essential part of this course will be leadership activities and Supervised Agriculture Experience Programs.

**TECHNICAL STANDARDS****CONTENT STANDARD 1.0 : EXAMINE THE ROLE OF AGRICULTURE IN SOCIETY**

Performance Standard 1.1 : Recognize the Role of Agriculture in Society

*Performance Indicators :* 1.1.1-1.1.6

Performance Standard 1.2 : Understand the History of Production Agriculture

*Performance Indicators :* 1.2.1-1.2.3

Performance Standard 1.3 : Explore the World Food Supply

*Performance Indicators :* 1.3.1-1.3.2**CONTENT STANDARD 2.0 : DEVELOP LEADERSHIP AND COMMUNICATION SKILLS THROUGH PARTICIPATION IN FFA**

Performance Standard 2.1 : Understand the History and Organization of FFA

*Performance Indicators :* 2.1.1-2.1.4

Performance Standard 2.2 : Understand the Opportunities in FFA

*Performance Indicators :* 2.2.1-2.2.3

Performance Standard 2.3 : Properly Use Skills in Parliamentary Procedure

*Performance Indicators :* 2.3.1-2.3.3

Performance Standard 2.4 : Understand the Importance of School and Community Awareness

*Performance Indicators :* 2.4.1-2.4.3**CONTENT STANDARD 3.0 : DEVELOP A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) PROGRAM**

Performance Standard 3.1 : Understand The Benefits of an SAE Program

*Performance Indicators :* 3.1.1-3.1.5

Performance Standard 3.2 : Understand the Benefits of SAE Records

*Performance Indicators :* 3.2.1-3.2.4

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**CONTENT STANDARD 4.0 : EXPLORING SCIENTIFIC INVESTIGATION IN AGRICULTURE**

Performance Standard 4.1 : Design and Conduct Agricultural Research

*Performance Indicators* : 4.1.1-4.1.2

Performance Standard 4.2 : Report Agricultural Research

*Performance Indicators* : 4.2.1-4.2.3

Performance Standard 4.3 : Understand Scientific Measurement

*Performance Indicators* : 4.3.1-4.3.3

Performance Standard 4.4 : Use Laboratory Tools and Equipment

*Performance Indicators* : 4.4.1-4.4.5

Performance Standard 4.5 : Explore Careers in Agricultural Science

*Performance Indicators* : 4.5.1-4.5.2

**CONTENT STANDARD 5.0 : DEVELOP AN UNDERSTANDING OF THE ANIMAL SCIENCE INDUSTRY**

Performance Standard 5.1 : Explore and Evaluate the Livestock Industry

*Performance Indicators* : 5.1.1-5.1.4

Performance Standard 5.2 : Understand Animal Cellular Biology

*Performance Indicators* : 5.2.1-5.2.2

Performance Standard 5.7 : Explore Careers in Animal Science

*Performance Indicators* : 5.7.1-5.7.2

**CONTENT STANDARD 6.0 : UNDERSTANDING PLANT SCIENCE**

Performance Standard 6.1 : Identify Different Plant Classification Systems

*Performance Indicators* : 6.1.1-6.1.3

Performance Standard 6.2 : Identify Parts and Functions of Plant Cells

*Performance Indicators* : 6.2.1-6.2.3

Performance Standard 6.3 : Understand Plant Physiology

*Performance Indicators* : 6.3.1-6.3.4

Performance Standard 6.4 : Understand Flower Anatomy

*Performance Indicators* : 6.4.1-6.4.4

Performance Standard 6.5 : Understand Plant Propagation

*Performance Indicators* : 6.5.1-6.5.3

Performance Standard 6.6 : Understand Plant Nutrition and Health

*Performance Indicators* : 6.6.1-6.6.5

Performance Standard 6.7 : Explore Careers in Plant Science

*Performance Indicators* : 6.7.1-6.7.2

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS:****CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators* : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators* : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators* : 1.3.1-1.3.4

**ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS\*:**

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices

**Science:** Nature of Science  
Physical Science  
Life Science  
Earth and Space

\* Refer to the Biotechnology Standards for alignment by performance indicator.

**CORE COURSE:****RECOMMENDED STUDENT PERFORMANCE STANDARDS****COURSE INFORMATION:**

**COURSE TITLE:** Agriculture Science II  
**ABBR. NAME:** AG SCIENCE II  
**CREDITS:** 1  
**LEVEL:** L2  
**CIP CODE:** 01.0000  
**PREREQUISITE:** Agriculture Science I  
**CTSO:** FFA

**COURSE DESCRIPTION:**

This course is a continuation of Agriculture Science I. This course allows intermediate students to expand on skills and knowledge from Agriculture Science I. Areas of study include scientific investigations in agriculture, plant and soil sciences, agriculture sales and marketing, ornamental horticulture, animal sciences and natural resource management. An essential part of this course will be leadership activities and Supervised Agriculture Experience Programs. The appropriate use of technology and industry-standard equipment is an integral part of this course.

**TECHNICAL STANDARDS:****CONTENT STANDARD 2.0 : DEVELOP LEADERSHIP AND COMMUNICATION SKILLS THROUGH PARTICIPATION IN FFA**

Performance Standard 2.2 : Understand the Opportunities in FFA

*Performance Indicators :* 2.2.1-2.2.3

Performance Standard 2.3 : Properly Use Skills in Parliamentary Procedure

*Performance Indicators :* 2.3.1-2.3.3

Performance Standard 2.4 : Understand the Importance of School and Community Awareness

*Performance Indicators :* 2.4.1-2.4.3

**CONTENT STANDARD 3.0 : DEVELOP A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) PROGRAM**

Performance Standard 3.1 : Understand The Benefits of an SAE Program

*Performance Indicators :* 3.1.1-3.1.5

Performance Standard 3.2 : Understand the Benefits of SAE Records

*Performance Indicators :* 3.2.1-3.2.4

**CONTENT STANDARD 5.0 : DEVELOP AN UNDERSTANDING OF THE ANIMAL SCIENCE INDUSTRY**

Performance Standard 5.2 : Understand Animal Cellular Biology

*Performance Indicators :* 5.2.3-5.2.7

Performance Standard 5.3 : Explore Reproductive Physiology and Breeding Systems

*Performance Indicators :* 5.3.1-5.3.3

Performance Standard 5.4 : Understand Animal Nutrition

*Performance Indicators :* 5.4.1-5.4.2

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Performance Standard 5.5 : Understand Animal Health Management

*Performance Indicators* : 5.5.1-5.5.4

Performance Standard 5.6 : Explore Animal Welfare Issues

*Performance Indicators* : 5.6.1-5.6.3

**CONTENT STANDARD 7.0 : EXPLORING SOIL SCIENCE**

Performance Standard 7.1 : Understand Soil Texture and Structure

*Performance Indicators* : 7.1.1-7.1.4

Performance Standard 7.2 : Understand Soil Erosion

*Performance Indicators* : 7.2.1-7.2.2

Performance Standard 7.3 : Explore Careers in Soil Science

*Performance Indicators* : 7.3.1-7.3.2

**CONTENT STANDARD 8.0 : EXPLORING ORNAMENTAL HORTICULTURE**

Performance Standard 8.1 : Understand the Basic Principles of Landscape Design

*Performance Indicators* : 8.1.1-8.1.4

Performance Standard 8.2 : Understand the Basic Principles of Greenhouse Management

*Performance Indicators* : 8.2.1-8.2.5

Performance Standard 8.3 : Understand the Basic Principles of Floriculture

*Performance Indicators* : 8.3.1-8.3.4

Performance Standard 8.4 : Explore Careers in Ornamental Horticulture

*Performance Indicators* : 8.4.1-8.4.2

**CONTENT STANDARD 9.0 : EXPLAIN BASIC SALES AND MARKETING CONCEPTS FOR AGRICULTURE PRODUCTS**

Performance Standard 9.1 : Demonstrate an Understanding of Agricultural Marketing

*Performance Indicators* : 9.1.1-9.1.5

Performance Standard 9.2 : Understand the Principles of Agricultural Sales

*Performance Indicators* : 9.2.1-9.2.6

Performance Standard 9.3 : Explore Careers in Sales and Marketing

*Performance Indicators* : 9.3.1-9.3.2

**CONTENT STANDARD 10.0 : UNDERSTAND THE RELATIONSHIP BETWEEN AGRICULTURE AND NATURAL RESOURCE MANAGEMENT**

Performance Standard 10.1 : Explore Types of Natural Resources

*Performance Indicators* : 10.1.1-10.1.3

Performance Standard 10.2 : Understand Human Demand on Natural Resources

*Performance Indicators* : 10.2.1-10.2.3

Performance Standard 10.3 : Comprehend Natural Resource Conservation

*Performance Indicators* : 10.3.1-10.3.3

Performance Standard 10.4 : Understand Ecology and Ecosystems

*Performance Indicators* : 10.4.1-10.4.4

Performance Standard 10.5 : Explore Principles of Rangeland Management

*Performance Indicators* : 10.5.1-10.5.5

Performance Standard 10.6 : Explore Careers in Natural Resource Management

*Performance Indicators* : 10.6.1-10.6.2

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS:****CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators* : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators* : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators* : 1.3.1-1.3.4

**ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS\*:**

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices

**Science:** Nature of Science  
Physical Science  
Life Science  
Earth and Space

\* Refer to the Biotechnology Standards for alignment by performance indicator.

**CORE COURSE:****RECOMMENDED STUDENT PERFORMANCE STANDARDS****COURSE INFORMATION:****COURSE TITLE: Biotechnology****ABBR. NAME: BIO TECH****CREDITS: 1****LEVEL: L3C****CIP CODE: 26.1201****PREREQUISITE: Agriculture Science II****PROGRAM ASSESSMENTS: BIOTECHNOLOGY****WORKPLACE READINESS SKILLS****CTSO: FFA****COURSE DESCRIPTION:**

This course is a continuation of Agriculture Science II. This course allows advanced students to expand on skills and knowledge from Agriculture Science II. Areas of study will include a focus on animal and plant science applications, biochemistry, principles of genetic transfer and genetically modified organisms, bio-manufacturing, applications to the food industry, and trends in agricultural biotechnology research. An essential part of this course will be leadership activities and Supervised Agriculture Experience Programs. The appropriate use of technology and industry-standard equipment is an integral part of this course. Upon successful completion of this course, students will have acquired entry-level skills for employment and be prepared for postsecondary education.

**TECHNICAL STANDARDS:****CONTENT STANDARD 1.0 : RECOGNIZE THE HISTORICAL, SOCIAL, CULTURAL, AND POTENTIAL APPLICATIONS OF BIOTECHNOLOGY**

Performance Standard 1.1 : Distinguish Major Innovators, Historical Developments, and Potential Applications of Biotechnology

*Performance Indicators :* 1.1.1-1.1.5

Performance Standard 1.2 : Determine Regulatory Issues and Identify Agencies Associated with Biotechnology

*Performance Indicators :* 1.2.1-1.2.3

Performance Standard 1.3 : Analyze the Ethical, Legal, Social, and Cultural Issues Relating to Biotechnology

*Performance Indicators :* 1.3.1-1.3.4

**CONTENT STANDARD 2.0 : Demonstrate Laboratory Safety Procedures**

Performance Standard 2.1 : Safely Manage Biological Materials, Chemicals, and Wastes Used in the Laboratory

*Performance Indicators :* 2.1.1-2.1.3

Performance Standard 2.2 : Demonstrate Understanding of Required Safety Practices and Procedures

*Performance Indicators :* 2.2.1-2.2.5

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**CONTENT STANDARD 3.0 : Demonstrate Laboratory Skills as Applied to Biotechnology**

Performance Standard 3.1 : Maintain and Interpret Biotechnology Laboratory Records

*Performance Indicators* : 3.1.1-3.1.4

Performance Standard 3.2 : Demonstrate Proper Laboratory Procedures

*Performance Indicators* : 3.2.1-3.2.5**CONTENT STANDARD 4.0 : Perform Microbiology, Molecular Biology, Enzymology, and Immunology Procedures**

Performance Standard 4.1 : Perform Microbiology Procedures

*Performance Indicators* : 4.1.1-4.1.2

Performance Standard 4.2 : Perform Molecular Biology Procedures

*Performance Indicators* : 4.2.1-4.2.7

Performance Standard 4.3 : Perform Enzymology and Immunology Procedures

*Performance Indicators* : 4.3.1-4.3.3**CONTENT STANDARD 5.0 : DEMONSTRATE THE APPLICATION OF BIOTECHNOLOGY TO AGRICULTURE, FOOD, AND NATURAL RESOURCES (AFNR)**

Performance Standard 5.1 : Evaluate the application of Genetic Engineering to Improve Products of AFNR Systems

*Performance Indicators* : 5.1.1-5.1.4

Performance Standard 5.2 : Perform Biotechnology Processes Used in AFNR Systems

*Performance Indicators* : 5.2.1-5.2.7

Performance Standard 5.3 : Use Biotechnology to Monitor and Evaluate Procedures Performed in AFNR Systems

*Performance Indicators* : 5.3.1-5.3.6**CONTENT STANDARD 6.0 : EXPLORE CAREERS IN AGRICULTURAL BIOTECHNOLOGY**

Performance Standard 6.1 : Analyze Requirements for Careers in Agricultural Biotechnology

*Performance Indicators* : 6.1.1-6.1.3**CONTENT STANDARD 7.0 : SUPERVISED AGRICULTURAL EXPERIENCE (SAE)**

Performance Standard 7.1 : Understand the Benefits of an SAE Program

*Performance Indicators* : 7.1.1-7.1.2**CONTENT STANDARD 8.0 : LEADERSHIP TRAINING IN FFA**

Performance Standard 8.1 : Recognize the Traits of Effective Leaders and Participate in Leadership Training Through Involvement in FFA

*Performance Indicators* : 8.1.1-8.1.4

Performance Standard 8.2 : Understand the Importance of School and Community Awareness

*Performance Indicators* : 8.2.1

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS:****CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators* : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators* : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators* : 1.3.1-1.3.4**ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS\*:**

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices

**Science:** Nature of Science  
Physical Science  
Life Science  
Earth and Space

\* Refer to the Biotechnology Standards for alignment by performance indicator.



**COMPLEMENTARY COURSE(S):****RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Programs that utilize the complementary courses can include the following courses. The Advanced Studies course allows for additional study through investigation and in-depth research.

**COURSE INFORMATION:**

**COURSE TITLE: Biotechnology Advanced Studies**

**ABBR. NAME: BIO TECH AS**

**CREDITS: 1**

**LEVEL: AS**

**CIP CODE: 26.1201**

**PREREQUISITE: Biotechnology**

**CTSO: FFA**

**COURSE DESCRIPTION:**

This course is offered to students who have achieved all content standards in a program whose desire is to pursue advanced study through investigation and in-depth research. Students are expected to work independently or in a team and consult with their supervising teacher for guidance. The supervising teacher will give directions, monitor, and evaluate the students' topic of study. Coursework may include various work-based learning experiences such as internships and job shadowing, involvement in a school-based enterprise, completion of a capstone project, and/or portfolio development. This course may be repeated for additional instruction and credit.

**TECHNICAL STANDARDS:**

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS:**

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

**SAMPLE TOPICS:**

- Participate in individual/team competitions
- Investigate and utilize laboratory and management techniques and procedures
- Participation in an internship or job shadow opportunities
- Explore college and career opportunities