ENVIRONMENTAL MANAGEMENT CURRICULUM FRAMEWORK

This document was prepared by:

Office of Career, Technical, and Adult Education
Nevada Department of Education
755 N. Roop Street, Suite 201
Carson City, NV 89701

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 are part of a rigorous program of study and include 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 (CTSO)
- 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 ENVIRONMENTAL MANAGEMENT

PROGRAM TITLE:	**ENVIRONMENTAL MANAGEMENT**
STATE SKILL STANDARDS:	**ENVIRONMENTAL MANAGEMENT**
STANDARDS REFERENCE CODE:	**EMGMT**
CAREER CLUSTER:	**AGRICULTURE, FOOD AND NATURAL RESOURCES**
CAREER PATHWAY:	**ENVIRONMENTAL SERVICE SYSTEMS**
PROGRAM LENGTH:	**3 LEVELS (L1, L2, L3C)**
PROGRAM ASSESSMENT	**ENVIRONMENTAL MANAGEMENT** **WORKPLACE READINESS SKILLS**
CTSO:	**FFA**
GRADE LEVEL:	**9-12**
AVAILABLE INDUSTRY CERTIFICATIONS/LICENSES PROVIDERS:	

PROGRAM PURPOSE

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

The program includes the following state standards:

- Nevada CTE Skill Standards: Environmental Management
- Employability Skills for Career Readiness
- Nevada Academic Content Standards (alignment shown in the Nevada CTE Skill Standards):
    - Science (based on the Next Generation Science Standards)
    - 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.

ENVIRONMENTAL MANAGEMENT Core Course Sequence	
COURSE NAME	**LEVEL**
Environmental Management I	L1
Environmental Management II	L2
Environmental Management III	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.

ENVIRONMENTAL MANAGEMENT Core Course Sequence with Complementary Courses	
COURSE NAME	**LEVEL**
Environmental Management I	L1
Environmental Management II	L2
Environmental Management III	L3C
Environmental Management 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) successful completion of a CTE course of study in a program area, 2) successful 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 TITLE:	**Environmental Management I**
ABBR. NAME:	**ENVIRON MGMT I**
CREDITS:	**1**
LEVEL:	**L1**
CIP CODE:	**03.0101**
PREREQUISITE:	**None**
CTSO:	**FFA**

COURSE DESCRIPTION

This course is an introduction to environmental management. Areas of study include ecological concepts and scientific principles related to environmental science, soils, composting and recycling, fisheries, forestry, and wildlife habitat. An essential part of this course will be leadership activities and Supervised Agriculture Experience Programs.

TECHNICAL STANDARDS

CONTENT STANDARD 1.0 : INVESTIGATE ECOLOGICAL CONCEPTS AND SCIENCE PRINCIPLES RELATED TO ENVIRONMENTAL SCIENCE

Performance Standard 1.1 : Explore Ecological Principles

Performance Indicators : 1.1.1-1.1.7

Performance Standard 1.2 : Explore Ecosystems

Performance Indicators : 1.2.1-1.2.3

Performance Standard 1.3 : Explore Population Ecology

Performance Indicators : 1.3.1-1.3.4

CONTENT STANDARD 2.0 : EXPLORING SCIENTIFIC INVESTIGATION IN THE ENVIRONMENT

Performance Standard 2.1 : Design and Conduct Scientific Research

Performance Indicators : 2.1.1-2.1.3

Performance Standard 2.2 : Report Scientific Research

Performance Indicators : 2.2.1-2.2.7

Performance Standard 2.3 : Understand Scientific Measurement

Performance Indicators : 2.3.1-2.3.3

Performance Standard 2.4 : Use Laboratory Tools and Equipment

Performance Indicators : 2.4.1-2.4.5

CONTENT STANDARD 3.0 : EVALUATING ENVIRONMENTAL QUALITY

Performance Standard 3.3 : Investigate Soil Science

Performance Indicators : 3.3.1-3.3.5

CONTENT STANDARD 4.0 : EXPLORING CONCEPTS OF SUSTAINABLE USE

Performance Standard 4.1 : Investigate Sustainable Use Practices

Performance Indicators : 4.1.1-4.1.3

Performance Standard 4.2 : Composting

Performance Indicators : 4.2.1-4.2.3

…. continue on next page

Performance Standard 4.3 : Recycling
Performance Indicators : 4.3.1-4.3.4
Performance Standard 4.5 : Explore Hydroponics
Performance Indicators : 4.5.1-4.5.3

CONTENT STANDARD 8.0 : ENVIRONMENTAL LAW AND PUBLIC POLICY

Performance Standard 8.1 : Explore Current Environmental Issues
Performance Indicators : 8.1.1

CONTENT STANDARD 11.0 : PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN FFA

Performance Standard 11.1 : Recognize the Traits of Effective Leaders and Participate in Leadership Training Through Involvement in FFA
Performance Indicators : 11.1.1- 11.1.5
Performance Standard 11.2 : Understand the Opportunities in FFA
Performance Indicators : 11.2.1-11.2.3
Performance Standard 11.3 : Understand the Importance of School and Community Awareness
Performance Indicators : 11.2.3-11.3.3

CONTENT STANDARD 12.0 : DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A CAREER IN AGRICULTURE

Performance Standard 12.1 : Actively Develop and Participate in Supervised Agricultural Experience, Which Enables Students to Obtain Work-Based Skills
Performance Indicators : 12.1.1-12.1.3

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 Environmental Management Standards for alignment by performance indicator

CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS

COURSE TITLE:	**Environmental Management II**
ABBR. NAME:	**ENVIRON MGMT II**
CREDITS:	**1**
LEVEL:	**L2**
CIP CODE:	**03.0101**
PREREQUISITE:	**Environmental Management I**
CTSO:	**FFA**

COURSE DESCRIPTION

This course is a continuation of Environmental Management I. This course will provide intermediate students with instruction in advanced techniques and processes. The students will continue to develop all skills learned in Environmental Management I. Areas of study include air and water quality, soils, solid waste management, conventional and renewable energy resources, and career exploration. 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 1.0 : INVESTIGATE ECOLOGICAL CONCEPTS AND SCIENCE PRINCIPLES RELATED TO ENVIRONMENTAL SCIENCE

Performance Standard 1.3 : Explore Population Ecology

Performance Indicators : 1.3.5

CONTENT STANDARD 3.0 : EVALUATING ENVIRONMENTAL QUALITY

Performance Standard 3.1 : Investigate Air Quality

Performance Indicators : 3.1.1-3.1.10

Performance Standard 3.2 : Investigate Water Quality

Performance Indicators : 3.2.1-3.2.8

Performance Standard 3.3 : Investigate Soil Science

Performance Indicators : 3.3.6-3.3.10

CONTENT STANDARD 4.0 : EXPLORING CONCEPTS OF SUSTAINABLE USE

Performance Standard 4.4 : Explore Mineral Extraction Resources

Performance Indicators : 4.4.1-4.4.3

CONTENT STANDARD 6.0 : EXPLORE ENERGY SOURCES

Performance Standard 6.1 : Investigate Conventional Fuels

Performance Indicators : 6.1.1-6.1.4

Performance Standard 6.2 : Investigate Alternative Energy Resources

Performance Indicators : 6.2.1-6.2.5

CONTENT STANDARD 9.0 : ASSESS ENVIRONMENTAL SITE MANAGEMENT

Performance Standard 9.1 : Explore Hazardous Materials Management Systems

Performance Indicators : 9.1.1-9.1.5

Performance Standard 9.2 : Explore Incineration Systems

Performance Indicators : 9.2.1-9.2.3

…. continue on next page

Performance Standard 9.3 : Explore Sanitary Landfill Systems
Performance Indicators : 9.3.1-9.3.3

CONTENT STANDARD 10.0 : EXPLORE CAREER OPPORTUNITIES IN ENVIRONMENTAL SYSTEMS
Performance Standard 10.1 : Explore Careers in Environmental Systems
Performance Indicators : 10.1.1-10.1.3

CONTENT STANDARD 11.0 : PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN FFA
Performance Standard 11.2 : Understand the Opportunities in FFA
Performance Indicators : 11.2.3-11.2.5
Performance Standard 11.3 : Understand the Importance of School and Community Awareness
Performance Indicators : 11.3.4

CONTENT STANDARD 12.0 : DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A CAREER IN AGRICULTURE
Performance Standard 12.2 : Maintain a Supervised Agricultural Experience
Performance Indicators : 12.2.1-12.2.3

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 Environmental Management Standards for alignment by performance indicator

CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS

COURSE TITLE:	**Environmental Management III**
ABBR. NAME:	**ENVIRON MGMT III**
CREDITS:	**1**
LEVEL:	**L3C**
CIP CODE:	**03.0101**
PREREQUISITE:	**Environmental Management II**
CTSO:	**FFA**

COURSE DESCRIPTION

This course is a continuation of Environmental Management II. This course will provide advanced students with instruction in environmental site management, law and public policy, GPS and GIS, and hydrology and hydrogeology. The students will continue to develop all skills learned in Environmental Management I and II. 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 in this field.

TECHNICAL STANDARDS

CONTENT STANDARD 4.0 : EXPLORING CONCEPTS OF SUSTAINABLE USE
Performance Standard 4.4: Explore Mineral Extraction Resources
Performance Indicators : 4.4.4-4.4.5

CONTENT STANDARD 5.0 : USING GIS AND GPS
Performance Standard 5.1 : Understand the operation of a GPS
Performance Indicators : 5.1.1-5.1.3
Performance Standard 5.2 : Use Geospatial Analysis Software
Performance Indicators : 5.2.1-5.2.3
Performance Standard 5.3 : Explore Remote Sensing
Performance Indicators : 5.3.1-5.3.2

CONTENT STANDARD 7.0 : HYDROLOGY AND HYDROGEOLOGY
Performance Standard 7.1 : Explore Hydrology Principles
Performance Indicators : 7.1.1-7.1.3
Performance Standard 7.2 : Explore Principles of Hydrogeology
Performance Indicators : 7.2.1-7.2.6
Performance Standard 7.3 : Investigate Watersheds
Performance Indicators : 7.3.1-7.3.3

CONTENT STANDARD 8.0 : ENVIRONMENTAL LAW AND PUBLIC POLICY
Performance Standard 8.1 : Explore Current Environmental Issues
Performance Indicators : 8.1.2-8.1.6
Performance Standard 8.2 : Understand the Purposes of Major Laws Impacting Environmental Service
Performance Indicators : 8.2.1- 8.2.9

…. continue on next page

CONTENT STANDARD 9.0 : ASSESS ENVIRONMENTAL SITE MANAGEMENT

Performance Standard 9.4 : Explore Solid Waste Management Systems

Performance Indicators : 9.4.1-9.4.4

Performance Standard 9.5 : Explore Waste Water Treatments

Performance Indicators : 9.5.1-9.5.2

Performance Standard 9.6: Explore Public Drinking Water Treatments

Performance Indicators : 9.6.1-9.6.4

CONTENT STANDARD 11.0 : PARTICIPATE IN LEADERSHIP TRAINING THROUGH MEMBERSHIP IN FFA

Performance Standard 11.2 : Understand the Opportunities in FFA

Performance Indicators : 11.2.3-11.2.5

Performance Standard 11.3 : Understand the Importance of School and Community Awareness

Performance Indicators : 11.2.3-11.3.3

CONTENT STANDARD 12.0 : DESCRIBE THE RELATIONSHIP BETWEEN A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND PREPARATION OF STUDENTS FOR A CAREER IN AGRICULTURE

Performance Standard 12.2 : Maintain a Supervised Agricultural Experience

Performance Indicators : 12.2.1-12.2.3

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 Environmental Management Standards for alignment by performance indicator

COMPLEMENTARY COURSE(S):

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 TITLE:	**Environmental Management Advanced Studies**
ABBR. NAME:	**ENVIRON MGMT AS**
CREDITS:	**1**
LEVEL:	**AS**
CIP CODE:	**03.0101**
PREREQUISITE:	**Environmental Management III**
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 shop management techniques and procedures
- Participation in an internship or job shadow opportunities
- Explore college and career opportunities