AVIATION TECHNOLOGY
CURRICULUM FRAMEWORK

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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

AVIATION TECHNOLOGY

PROGRAM INFORMATION

Program Title:	**Aviation Technology**
State Skill Standards:	**Aviation Technology**
Standards Reference Code:	**AVIT**
Career Cluster:	**Transportation, Distribution & Logistics**
Career Pathway:	**Transportation Operations**
Program Length:	**3 Levels (L1, L2, L3c)**
Program Assessments:	**Aviation Technology**
	Workplace Readiness Skills
CTSO:	**SkillsUSA**
Grade Level:	**9-12**
Industry Certifications:	**See Nevada's Approved Certification Listing**

PROGRAM PURPOSE

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

The program includes the following state standards:

- Nevada CTE Skill Standards: Aviation Technology
- 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.

AVIATION TECHNOLOGY

Core Course Sequence

AVIATION TECHNOLOGY	LEVEL
Aviation Technology I	L1
Aviation Technology II	L2
Aviation Technology 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.

AVIATION TECHNOLOGY

Core Course Sequence with Complementary Courses

AVIATION TECHNOLOGY	LEVEL
Aviation Technology I	L1
Aviation Technology II	L2
Aviation Technology III	L3C
Aviation Technology 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:	**Aviation Technology I**
Abbr. Name:	**AVIATION TECH I**
Credits:	**1**
Level:	**L1**
CIP Code:	**49.0101**
Prerequisite:	**None**
CTSO:	**SkillsUSA**

COURSE DESCRIPTION:

This course is designed as an introduction to general aeronautics. It includes the study of physical mathematics, weight and balance, FAA regulations, common and special tools and measuring devices, fluid lines, hardware, aircraft servicing, and documentation (FAR Part 65). This course is also designed to expand and to prepare the prospective A&P technician for the electrical portion of the Oral and Practical exam in obtaining an FAA certified license. Provide basic information on the principles, fundamentals and technical procedures in the areas of aircraft, aerospace and aviation professions. Students will learn the history of flight, developmental trends, the principles of flight and navigation, the flight environment of an aerospace vehicle, the missions and roles of today's aerospace vehicles, the fundamentals of rocketry and space travel, and the physiology of flight. The appropriate use of technology and industry-standard equipment is an integral part of this course.

TECHNICAL STANDARDS:

CONTENT STANDARD 1.0 :   **IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES**
Performance Standard 1.1 :   Demonstrate General Lab Safety Rules and Procedures
    Performance Indicators :   1.1.1-1.1.19
Performance Standard 1.2 :   Identify and Utilize Hand Tools
    Performance Indicators :   1.2.1-1.2.5
Performance Standard 1.3 :   Identify and Utilize Power Tools and Equipment
    Performance Indicators :   1.3.1-1.3.5

CONTENT STANDARD 2.0 :   **ASSESS THE IMPACT OF AVIATION ON SOCIETY**
Performance Standard 2.1 :   Describe History of Aviation
    Performance Indicators :   2.1.1-2.1.4
Performance Standard 2.2 :   Investigate Related Careers in Aviation
    Performance Indicators :   2.2.1-2.2.4
Performance Standard 2.3 :   Analyze Ethics in Aviation
    Performance Indicators :   2.3.1-2.3.2
Performance Standard 2.4 :   Interpret the Aviation Engineering Design Process
    Performance Indicators :   2.4.1-2.4.2

CONTENT STANDARD 3.0 :   **ANALYZE THE AVIATION CERTIFICATION PROCESSES**
Performance Standard 3.1 :   Research Certification and Regulations
    Performance Indicators :   3.1.1-3.1.4, 3.1.7-3.1.8

CONTENT STANDARD 5.0 :	**INVESTIGATE MATERIAL PROPERTIES**
Performance Standard 5.2 :	Demonstrate Measuring and Scaling Techniques for Aviation
Performance Indicators :	5.2.1-5.2.2, 5.2.9
CONTENT STANDARD 7.0 :	**ANALYZE FLIGHT NAVIGATION AND PHYSIOLOGY**
Performance Standard 7.1 :	Investigate Flight Navigation Requirements
Performance Indicators :	7.1.1, 7.1.12
Performance Standard 7.2 :	Apply the Principals of Flight Planning and Navigation
Performance Indicators :	7.2.4, 7.2.6
CONTENT STANDARD 8.0 :	**INTERPRET THE PHYSICS AND AERODYNAMICS OF FLIGHT**
Performance Standard 8.1 :	Analyze the Physics of Flight
Performance Indicators :	8.1.1-8.1.3, 8.1.5
Performance Standard 8.2 :	Analyze Aerodynamics of Flight
Performance Indicators :	8.2.1-8.2.5, 8.2.12
CONTENT STANDARD 9.0 :	**ANALYZE THE FLIGHT ENVIRONMENT**
Performance Standard 9.2 :	Analyze Aeronautical Charts
Performance Indicators :	9.2.2-9.2.3
Performance Standard 9.3 :	Analyze Airspace and Communication Procedures
Performance Indicators :	9.3.8-9.3.9

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:	Science and Engineering Practices
	Engineering Design
	Motion and Stability: Forces and Interactions

* Refer to the Aviation Technology Standards for alignment by performance indicator.

CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS

COURSE INFORMATION:

COURSE TITLE:	**Aviation Technology II**
ABBR. NAME:	**AVIATION TECH II**
CREDITS:	**1**
LEVEL:	**L2**
CIP CODE:	**40.0101**
PREREQUISITE:	**Aviation Technology I**
CTSO:	**SkillsUSA**

COURSE DESCRIPTION:

This course is a continuation of Aviation Technology I. This course provides intermediate aviation technology students with an in-depth knowledge about the systems and structures found on today's aircraft. The student will become familiar with aircraft structural materials, coverings, electrical systems, hydraulics, computer systems, environmental systems, safety equipment, control systems, power plants, and avionics. Through the knowledge gained in studying aircraft systems and structures, the student will learn the fundamentals to maintain and safely operate an aircraft. The appropriate use of technology and industry-standard equipment is an integral part of this course.

TECHNICAL STANDARDS:

CONTENT STANDARD 2.0 :	**ASSESS THE IMPACT OF AVIATION ON SOCIETY**
Performance Standard 2.3 :	Analyze Ethics in Aviation
Performance Indicators :	2.3.3-2.3.4
Performance Standard 2.4 :	Interpret the Aviation Engineering Design Process
Performance Indicators :	2.4.3
CONTENT STANDARD 3.0 :	**ANALYZE THE AVIATION CERTIFICATION PROCESSES**
Performance Standard 3.1 :	Research Certification and Regulations
Performance Indicators :	3.1.9
CONTENT STANDARD 4.0 :	**ANALYZE AIRCRAFT SYSTEMS**
Performance Standard 4.1 :	Identify Aircraft Engine Types
Performance Indicators :	4.1.1-4.1.6
Performance Standard 4.3 :	Explore Aircraft Propeller Systems
Performance Indicators :	4.3.1-4.3.4
Performance Standard 4.4 :	Analyze Aircraft Systems
Performance Indicators :	4.4.1-4.4.4
Performance Standard 4.5 :	Examine Electrical, Hydraulic and Pneumatic Systems
Performance Indicators :	4.5.1-4.5.9

CONTENT STANDARD 5.0 : **INVESTIGATE MATERIAL PROPERTIES**

Performance Standard 5.1 : Analyze Aircraft Structures

Performance Indicators : 5.1.1-5.1.12

Performance Standard 5.2 : Demonstrate Measuring and Scaling Techniques for Aviation

Performance Indicators : 5.2.3-5.2.4

CONTENT STANDARD 8.0 : **INTERPRET THE PHYSICS AND AERODYNAMICS OF FLIGHT**

Performance Standard 8.1 : Analyze the Physics of Flight

Performance Indicators : 8.1.4, 8.1.6

Performance Standard 8.2 : Analyze Aerodynamics of Flight

Performance Indicators : 8.2.6-8.2.8, 8.2.16

CONTENT STANDARD 9.0 : **ANALYZE THE FLIGHT ENVIRONMENT**

Performance Standard 9.3 : Analyze Airspace and Communication Procedures

Performance Indicators : 9.3.11

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: Science and Engineering Practices

Engineering Design

* Refer to the Aviation Technology Standards for alignment by performance indicator.

CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS

COURSE INFORMATION:

COURSE TITLE:	Aviation Technology III
ABBR. NAME:	AVIATION TECH III
CREDITS:	1
LEVEL:	L3C
CIP CODE:	40.0101
PREREQUISITE:	Aviation Technology II
PROGRAM ASSESSMENTS:	Aviation Technology
	WORKPLACE READINESS SKILLS
CTSO:	SkillsUSA

COURSE DESCRIPTION:

This course is a continuation of Aviation Technology II. This course provides advanced aviation technology students with instruction in advanced techniques and processes and will prepare the student to successfully take the FAA Part 61.105b Private Pilot Knowledge Test. This course introduces students to the principles of flight, the aircraft flight environment, aircraft performance standards, flight controls, metrology, radio communications, flight planning, FAA regulations, navigation, the human body in flight, airman decision making, accident prevention, Airman Information Manual (AIM), and the fundamentals of instrument flight. This course prepares the students to take the FAA Part 61.109 Private Pilot Written Exam. Upon successful completion of this course, students will have acquired entry-level skills for employment and be prepared for postsecondary education. The appropriate use of technology and industry-standard equipment is an integral part of this course.

TECHNICAL STANDARDS:

CONTENT STANDARD 3.0 :   **ANALYZE THE AVIATION CERTIFICATION PROCESSES**
Performance Standard 3.1 :   Research Certification and Regulations
    Performance Indicators :   3.1.5-3.1.6

CONTENT STANDARD 4.0 :   **ANALYZE AIRCRAFT SYSTEMS**
Performance Standard 4.2 :   Research Reciprocating Engine Systems
    Performance Indicators :   4.2.1-4.2.9
Performance Standard 4.4 :   Analyze Aircraft Systems
    Performance Indicators :   4.4.5-4.4.14

CONTENT STANDARD 5.0 :   **INVESTIGATE MATERIAL PROPERTIES**
Performance Standard 5.2 :   Demonstrate Measuring and Scaling Techniques for Aviation
    Performance Indicators :   5.2.5-5.2.8

CONTENT STANDARD 6.0 :   **ANALYZE AIRCRAFT WEATHER**
Performance Standard 6.1 :   Analyze Weather and Weather Services
    Performance Indicators :   6.1.1-6.1.11

CONTENT STANDARD 7.0 :   **ANALYZE FLIGHT NAVIGATION AND PHYSIOLOGY**
Performance Standard 7.1 :   Investigate Flight Navigation Requirements
    Performance Indicators :   7.1.2-7.1.11

Performance Standard 7.2 :   Apply the Principals of Flight Planning and Navigation

    Performance Indicators :   7.2.1-7.2.3, 7.2.5

Performance Standard 7.3 :   Identify Flight Physiology Factors

    Performance Indicators :   7.3.1-7.3.8

CONTENT STANDARD 8.0 :   **INTERPRET THE PHYSICS AND AERODYNAMICS OF FLIGHT**

Performance Standard 8.1 :   Analyze the Physics of Flight

    Performance Indicators :   8.1.7-8.1.11

Performance Standard 8.2 :   Analyze Aerodynamics of Flight

    Performance Indicators :   8.2.9-8.2.11, 8.2.13-8.2.14

CONTENT STANDARD 9.0 :   **ANALYZE THE FLIGHT ENVIRONMENT**

Performance Standard 9.1 :   Identify and Explain the Airport Environment

    Performance Indicators :   9.1.1-9.1.7

Performance Standard 9.2 :   Analyze Aeronautical Charts

    Performance Indicators :   9.2.1, 9.2.4-9.1.8

Performance Standard 9.3 :   Analyze Airspace and Communication Procedures

    Performance Indicators :   9.3.1-9.3.7, 9.3.10, 9.3.12

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: Science and Engineering Practices

* Refer to the Aviation Technology 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:	**Aviation Technology Advanced Studies**
ABBR. NAME:	**AVIATION TECH AS**
CREDITS:	**1**
LEVEL:	**AS**
CIP CODE:	**490101**
PREREQUISITE:	**Aviation Technology III**
CTSO:	**SkillsUSA**

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 unmanned aerial vehicles
- Participation in an internship or job shadow opportunities
- Explore college and career opportunities