



Unmanned Safety Institute (USI)
Small UAS (sUAS) Safety Level 1™ Certification
Candidate Handbook & Credential Guide

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1. Welcome to the Unmanned Safety Institute

About USI

The Unmanned Safety Institute (USI) is a global leader in workforce development, safety education, and industry credentialing for Unmanned Aircraft Systems (UAS) and related uncrewed technologies. USI develops industry-aligned training programs and certifications designed to prepare learners, educators, and organizations for the safe, effective, and responsible adoption of emerging aviation and autonomous technologies.

USI works with educational institutions, employers, government agencies, and industry partners to promote a culture of safety while developing workforce-ready competencies that support high-demand occupations across aviation, aerospace, robotics, remote sensing, public safety, infrastructure inspection, precision agriculture, and technology-enabled operations.

The sUAS Safety Level 1™ Certification serves as a foundational credential within USI's broader certification pathway, introducing learners to the technical principles and systems that underpin modern unmanned aircraft operations and related emerging technologies.

2. About the Small UAS (sUAS) Safety Level 1™ Certification

The Small UAS (sUAS) Safety Level 1™ Certification is an industry-developed credential that validates foundational knowledge of the principles, systems, and technologies that power modern Unmanned Aircraft Systems (UAS).

The credential introduces learners to aircraft systems, autonomous vehicles, robotics, communications systems, data links, ground control stations, sensors, payloads, and remote sensing technologies that increasingly support operations across a wide range of commercial, industrial, governmental, and public safety environments.

The Safety Level 1 Certification is designed to develop technical literacy and systems-thinking skills that provide a strong foundation for advanced education, workforce training, and career pathway progression within aviation and technology-enabled industries.

The credential may be delivered through secondary education, postsecondary education, workforce development programs, corporate training initiatives, or other approved educational environments.

3. Credential Overview

Credential-at-a-Glance

Attribute	Description
Credential Name	Small UAS (sUAS) Safety Level 1™ Certification
Credential Type	Industry Certification
Credentialing Organization	Unmanned Safety Institute (USI)
Credential Focus	Fundamentals of Unmanned Aircraft Systems (UAS)
Recommended Instructional Hours	90–155 Hours
Delivery Format	Classroom, Online, or Hybrid
Assessment Method	Third-Party Proctored Certification Examination
Assessment Model	Formative Assessments + Summative Examination
Primary Workforce Focus	UAS, Robotics, Remote Sensing, Aerospace Technology
Credential Pathway	Foundational Credential

Credential Objectives

The Safety Level 1 Certification is intended to provide learners with a broad understanding of:

- UAS terminology, classifications, and applications.
 - Aircraft systems and aerodynamics.
 - Robotics and autonomous system concepts.
 - Communications systems and data links.
 - Ground control station architecture.
 - Sensor technologies and payload integration.
 - Remote sensing and geospatial data collection.
 - Systems thinking and technology integration.
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4. Occupational Purpose

Occupational Purpose Statement

The Small UAS (sUAS) Safety Level 1™ Certification validates foundational technical knowledge required to understand, support, and advance into workforce pathways involving Unmanned Aircraft Systems (UAS) and related unmanned, robotic, automated, geospatial, and remote sensing technologies.

The credential prepares learners to:

- Understand UAS terminology, classifications, and system architecture.
- Explain aircraft performance, aerodynamics, and vehicle design principles.
- Describe guidance, navigation, and control systems used in airborne robotic vehicles.
- Understand communications systems, telemetry, and UAS data links.
- Identify the functions and components of ground control stations and human-machine interfaces.
- Evaluate the capabilities and applications of payloads and remote sensing technologies.
- Apply systems-thinking concepts to integrated aircraft, sensor, and data collection operations.

The knowledge and competencies validated through this credential support workforce readiness and career pathway progression across multiple high-demand occupations recognized by the U.S. Department of Labor's Standard Occupational Classification (SOC) system and O*NET Online occupational framework.

5. Industry Applications & Workforce Relevance

Building Foundational Skills for Emerging Technologies

The use of UAS and related autonomous technologies continues to expand rapidly across both public and private sectors. Modern unmanned aircraft systems are no longer limited to traditional aviation applications; they are increasingly integrated into industries that rely on advanced sensing technologies, robotics, geospatial information systems, and technology-enabled decision making.

Industry Sectors Supported

- Aerospace & Aviation Technology
- Robotics & Autonomous Systems
- Mechatronics & Advanced Manufacturing
- Surveying & Geospatial Mapping
- Remote Sensing & Data Analytics
- Precision Agriculture
- Infrastructure Inspection & Asset Management
- Energy & Utilities
- Environmental Monitoring
- Public Safety & Emergency Response

The Small UAS (sUAS) Safety Level 1™ Certification introduces learners to the foundational technical concepts that underpin these applications and supports continued advancement into specialized education and workforce pathways.

6. Occupational Alignment (SOC / O*NET)

Occupational Linkage

The Small UAS (sUAS) Safety Level 1™ Certification supports entry-level workforce preparation and pathway progression into occupations utilizing unmanned systems, robotics, automation, geospatial technologies, remote sensing, and integrated electronic systems.

Primary Occupational Alignments

SOC / O*NET Code	Occupation	Relationship to Small UAS (sUAS) Safety Level 1™ Certification
17-3024.00	Electro-Mechanical and Mechatronics Technologists and Technicians	Operation, testing, maintenance, and support of unmanned, automated, and electromechanical systems.

17-3024.01	Robotics Technicians	Robotic vehicles, autonomy, sensors, feedback systems, and control architectures.
19-2099.01	Remote Sensing Scientists and Technologists	Aerial data collection, remote sensing systems, sensor payloads, and imagery acquisition.
17-3031.00	Surveying and Mapping Technicians	Geospatial data collection, mapping support, aerial imagery, and spatial information systems.
33-3051.00	Police and Sheriff's Patrol Officers	Aerial situational awareness, incident documentation, remote sensing, and UAS-supported public safety operations.

Secondary Occupational Alignments

SOC / O*NET Code	Occupation
17-3023.00	Electrical and Electronic Engineering Technologists and Technicians
17-3021.00	Aerospace Engineering and Operations Technologists and Technicians
19-4012.00	Agricultural and Food Science Technicians
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment
19-2041.00	Environmental Scientists and Specialists
33-2021.00	Fire Inspectors and Investigators

Workforce Alignment Statement

The Small UAS (sUAS) Safety Level 1™ Certification is designed to provide foundational technical competencies that support progression into these and related workforce pathways. Occupational examples are representative of the broad range of industries utilizing UAS and autonomous technologies and are not intended to limit the scope of applications supported by the credential.

7. Knowledge, Skills, and Learning Outcomes

Upon successful completion of the Small UAS (sUAS) Safety Level 1™ Certification, learners will be able to demonstrate foundational competencies in the following areas:

UAS Foundations & Technical Communication

- Define and apply specialized UAS terminology and classifications.
- Interpret technical information related to unmanned aircraft systems and operations.

- Describe regulatory and operational considerations affecting UAS deployment.

Aircraft Systems & Aerodynamics

- Explain the interaction between aircraft systems and subsystems.
- Describe how lift, drag, thrust, weight, airframe design, and environmental factors influence aircraft performance.
- Identify the components and functions of remotely piloted aircraft platforms.

Robotics, Guidance, Navigation & Control

- Explain common guidance, navigation, and control (GNC) methods used in airborne robotic vehicles.
- Describe levels of autonomy, control logic, sensors, controllers, and feedback systems.
- Understand the role of human-machine interaction in autonomous operations.

Communications Systems & Data Links

- Describe the function of UAS data links and communications architectures.
- Explain the operation of antennas, receivers, telemetry systems, and radio communications.
- Identify factors that influence communication reliability, security, and operational safety.

Ground Control Stations & Human-Machine Interfaces

- Identify the functions and components of UAS control stations.
- Describe the interaction between hardware, software, data processing, storage, and human operators.
- Explain the role of human-machine interfaces in operational decision making.

Payloads & Remote Sensing Technologies

- Differentiate between cameras, sensors, communications payloads, and specialized mission equipment.
- Explain the principles of optical, multispectral, hyperspectral, synthetic aperture radar (SAR), and LiDAR imaging systems.
- Describe the use of remote sensing technologies in agriculture, infrastructure inspection, environmental monitoring, mapping, and public safety operations.

Systems Integration & Data Architecture

- Explain how aircraft, sensors, control stations, communications systems, and data processing functions interact within an integrated UAS ecosystem.
- Apply systems-thinking principles to understand technical workflows supporting modern autonomous operations.

Safety & Risk Awareness

- Recognize system limitation and potential failure points
- Understand risks associated with automation, communications loss, and human factors
- Support standardized and safety-focused use of UAS technology.

8. Curriculum & Competency Framework

Curriculum Overview

The Small UAS (sUAS) Safety Level 1™ Certification curriculum consists of five integrated instructional units designed to build foundational knowledge of UAS technologies and operations.

Unit	Topic	Summary
Unit 1	Foundations	UAS terminology, classifications, applications, capabilities, and regulatory frameworks.
Unit 2	Remote Vehicles	Aircraft design, robotics concepts, autonomy, aerodynamics, control systems, and vehicle performance.
Unit 3	Data Links	Communications systems, telemetry, modulation, antennas, receivers, and operational reliability.
Unit 4	Control Stations	Ground control systems, hardware, software, data processing, storage, and human-machine interfaces.
Unit 5	Payloads & Remote Sensing	Sensors, imaging systems, electromagnetic radiation, optical, multispectral, hyperspectral, SAR, and LiDAR technologies.

Competency Framework

The curriculum is designed to develop measurable competencies across the following domains:

- Technical Communication
- Aircraft Systems Knowledge
- Robotics & Autonomous Systems
- Communications & Data Networks
- Human-Machine Interfaces
- Sensor Technology & Remote Sensing
- Systems Thinking & Technology Integration

9. Certification Assessment & Competency Validation

Assessment Philosophy

The Small UAS (sUAS) Safety Level 1™ Certification utilizes a layered assessment methodology designed to validate learner competency and mastery of foundational UAS concepts rather than simple course participation.

Formative Assessment

Throughout instruction, learners participate in:

- Module-level knowledge checks.
- Instructor-guided discussions and activities.
- Progress assessments aligned to learning objectives.
- Opportunities for remediation and reinforcement.

Summative Certification Examination

Successful completion of the credential requires passing a comprehensive cumulative certification examination.

Examination Characteristics

- Third-party proctored testing environment.
- Secure identity verification procedures.
- Standardized administration protocols.
- Objective scoring methodology.
- Assessment aligned to published competency standards.

Certification Competency Blueprint

Competency Domain	Assessment Weight
UAS Nomenclature, Limitations & Classification	15-25%
Aerodynamics & Aircraft Performance	5-15%
Aircraft Systems	5-15%
Data Links & Communications	10-20%
Ground Control Stations	5-15%
Payloads & Remote Sensing Concepts	25-35%

10. Candidate Policies & Examination Procedures

Eligibility

The Small UAS (sUAS) Safety Level 1™ Certification is intended for learners participating in approved educational or workforce development programs. There are no prerequisite certifications required to attempt the examination.

Examination Security

USI maintains examination security procedures designed to preserve the integrity and value of the credential. Candidates may be required to verify identity and comply with all examination administration requirements established by USI and its authorized testing partners.

Accommodation

USI is committed to providing reasonable accommodation for qualified candidates consistent with applicable laws and regulations. Accommodation requests should be submitted prior to scheduling the certification examination.

Retesting

Candidates who do not successfully pass the certification examination may be eligible for retesting according to USI policies in effect at the time of testing.

11. Workforce Pathways & Career Opportunities

Building a Foundation for Career Success

The Small UAS (sUAS) Safety Level 1™ Certification serves as a foundational credential supporting continued education and workforce pathway progression in uncrewed aviation, robotics, mechatronics, geospatial technologies, remote sensing, and related technical fields.

The competencies developed through this credential support future advancement into educational programs, advanced industry certifications, and occupations associated with:

- Aerospace & Aviation Operations
- Robotics & Automation
- Surveying & Mapping
- Remote Sensing & Geospatial Analysis
- Infrastructure Inspection
- Precision Agriculture
- Environmental Monitoring
- Public Safety & Emergency Response
- Engineering Technology
- Technical Operations & Systems Support

Suggested Workforce Pathway

STEM Education → Small UAS (sUAS) Safety Level 1™ Certification → Advanced UAS/Safety Training → Postsecondary Education or Workforce Training → Industry Employment

12. Frequently Asked Questions

Is the Small UAS (sUAS) Safety Level 1™ Certification a drone pilot license?

No. The Safety Level 1 Certification is an industry credential designed to validate foundational knowledge of UAS systems, technologies, and operations. It complements, but does not replace, any FAA regulatory requirements.

Does the certification require hands-on flight activities?

The credential primarily validates knowledge and understanding of UAS concepts and technologies. Program implementation may include additional instructional or practical activities depending on the educational environment.

Who should pursue the Small UAS (sUAS) Safety Level 1™ Certification?

The credential is appropriate for secondary students, postsecondary students, workforce learners, educators, and individuals interested in developing foundational knowledge of UAS and emerging autonomous technologies.

How is competency measured?

Competency is measured through a combination of formative learning activities and a cumulative, third-party proctored certification examination aligned to published competency standards.

Appendix A – Occupational Alignment Crosswalk

Safety Level 1 Competency	Representative Occupational Skill
UAS Terminology & Classification	Technical communication and systems understanding.
Aircraft Systems & Aerodynamics	Understanding of engineering systems and operational performance.
Guidance, Navigation & Control	Knowledge of autonomous and robotic system architecture.
Communications & Data Links	Familiarity with electronic communications and telemetry systems.
Ground Control Stations	Human-machine interfaces and operational control systems.
Payloads & Remote Sensing	Geospatial technologies, sensor systems, and aerial data collection.

Systems Integration

Systems thinking and interdisciplinary technical problem solving.

Appendix B – Glossary of Terms

Autonomy: The capability of a system to perform functions with limited or no direct human input.

Ground Control Station (GCS): The equipment and software used to monitor and control a remotely piloted aircraft.

LiDAR: Light Detection and Ranging technology used to measure distances and generate high-resolution spatial data.

Payload: Equipment or sensors carried by an aircraft to accomplish a mission or collect information.

Remote Sensing: The acquisition of information about an object or area from a distance, typically through sensors mounted on aerial or satellite platforms.

UAS: Unmanned Aircraft System; includes the aircraft, control station, communications links, payloads, and associated support equipment.

Telemetry: The process of collecting and transmitting data from an aircraft or system to a remote location.

Contact Information

Unmanned Safety Institute (USI)

Website: www.flyusi.org

For information regarding certification policies, approved training providers, candidate accommodations, or examination procedures, please visit the USI website or contact the Unmanned Safety Institute directly.

This document is intended to provide public information regarding the purpose, structure, competency standards, assessment methodology, and workforce alignment of the Small UAS (sUAS) Safety Level 1™ Certification.