STRANDS AND STANDARDS

UAS: CAPSTONE

Learning that works for Utah
CTE®

Course Description

UAS Capstone is a project-oriented course that may be an internship with a UAS company, research project, advanced application of UAS skills, participation in a CTSO competition, partnered project with a university, or a design/build project. This course is the pinnacle in this pathway and is designed to provide a kickstart to a student's post-secondary plans in Unmanned Aircraft Systems and is also geared toward developing a student's professional skills.

Intended Grade Level	10-12
Units of Credit	0.5
Core Code	40.11.00.00.058
Concurrent Enrollment Core Code	N/A
Prerequisite	UAS: Remote Pilot Certification
Skill Certification Test Number	N/A
Skill Certification Cut Score	**N/A**
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Aviation-Flight
Endorsement 2	Unmanned Aircraft Systems

Updated: November 2024

STRAND 1: RESPONSIBLE FLIGHT

Students will recognize the privileges and limitations of flying UAS responsibly, including Federal Aviation Administration (FAA) recreational and commercial requirements.

Standard 1

Confirm FAA recreational flying requirements of The Recreational UAS Safety Test (TRUST) including but not limited to:

- General requirements
- FAA-recognized Community Based Organization (CBO)
- Visual line of sight (VLOS) and Visual Observer (VO)
- Airspace limitations and authorization
- DroneZone, registration and Remote Identification (RID, Remote ID)
- B4UFLY
- Do not operate your drone in a manner that endangers the safety of the National Airspace System (NAS) or interferes with other aircraft

Standard 2

Confirm FAA requirements per the Code of Federal Regulations for commercial UAS operators.

- General requirements
- Commercial operations and limitations
- Waivers and authorizations

Standard 3

Demonstrate the pilot's responsibility to the UAS community.

- Recreational limitations vs commercial limitations

Standard 4

Analyze compensation types and situations, intent, and responsibility for multiple purposes vs. for purely recreational flight. · 49 U.S.C. §44809(c)

Performance Skills

- Earn a recent (12 months) FAA TRUST certificate or Remote Pilot Certificate (Part 107) with recurrent training as needed.
- Have an FAA TRUST or Part 107 certificate accessible while operating UAS.
- Demonstrate safe recreational flying practices in accordance with FAA regulations.
- Present a plan for following Part 107 regulations related to publishing creative work.

STRAND 2: INDUSTRY DELIVERABLES

Students will gain or increase their understanding of various deliverables typically provided via UAS in industry, including deliverables using emerging technologies.

Standard 1

Identify basic deliverable options in UAS under Part 107.
Examples include but are not limited to:

- Orthomosaics, Digital Surface Maps (DSMs), and Digital Terrain Maps (DTMs)
- 3D models
- Thermal maps or images
- Agricultural applications including NDVI maps (plant health, fertilizer efficacy, plant categorization)
- Research and development (design, components, flight testing, battery composition)
- Volumetrics (stockpile reports, water levels, dirt levels, surface material estimates)
- Search and rescue operations
- Public service and first responders
- Inspections (solar panels, roof, power lines, bridge, thermal, ranch, building)
- Tourism (videos, postcards, calendars, maps, cautions, historic sites)
- Wildlife mitigation (animal counts, migration patterns, bedding patterns)
- Monitoring, progress reports, time lapse (construction, water levels, snow pack, trail maintenance)
- Geospatial Information Systems (GIS) applications

Standard 2

Compare UAS software options for processing deliverables.
Examples include but are not limited to:

- Adobe
- Pix4D
- Skybrowse
- Drone Deploy
- LP360
- Agisoft Metashape
- ArcGIS Drone2Map
- Autodesk Recap Pro & Recap Photo

Performance Skills

- Present a UAS project plan using a combination of deliverables and software options.

STRAND 3: UAS CAREER READINESS

Students will develop an understanding of professional interactions in a variety of situations and prepare to engage appropriately in public and digital settings.

Standard 1

Analyze digital portfolio pieces typical to a UAS career portfolio.

- Social media
- Webpage
- Project presentation
- Digital resume and cover letter
- Current UAS flight log

Standard 2

Identify digital professional networking profile elements.

- Cover photo
- Profile photo
- Profile bio and certifications
- Platform functions
- Professional messaging and communication

Standard 3

Show appropriate UAS-related resume and cover letter elements.

- Career objective
- Education
- Work experience
- Summary of flight experience
- Skills and interests
- Volunteer/memberships/leadership
- References
- Appropriate format
- Automated screening strategies

Standard 4

Develop strategies for appropriate, professional behavior.

- Communication (written, verbal, nonverbal)
- Settings (conferences, interviews, career fairs, digital meetings, WBL opportunities, volunteer work, etc.)

Performance Skills

- Create or update a personal resume and/or portfolio for a UAS career.
- Present an analysis of a professional social networking profile.
- Participate in a career-building, professional development, or community service UAS-related opportunity.
- Present a personalized UAS post-secondary plan (college or career).

STRAND 4: UAS STUDENT PROJECT

Students will participate in a chosen project in collaboration with a specific organization, business, school, or industry partner.

Standard 1

Participate in a work-based learning experience outside the classroom including, but not limited to:

- Professional video for a business, school, or community partner from conception, approval, implementation, and completion of project
- Collect agricultural data for a local farmer
- Monitor production and progress at a construction site
- Test drones to evaluate varieties for a specific project or test different set ups with propellers/sensors/ payloads
- Work with a college/university student or group on a project

Standard 2

Develop a project book throughout a student-chosen project including the following skills and elements:

- Preflight considerations
- Client communication
- Scheduling
- Aeronautical Decision Making (ADM)
- Crew Resource Management (CRM)
- Results

Performance Skills

- Demonstrate ADM and CRM skills via a student-chosen, advisor-approved UAS project.
- Present timely project-related progress reports to include accountability for actions and deadlines.
- Present an original project as applied to an individual project book.

Skill Certification Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
UAS: CAPSTONE													