Regional Occupational Program

Unmanned Aircraft Systems (UAS) 1 A-G
Taking to the Sky 2026-2027

COURSE DESCRIPTION

This course introduces students to the expanding field of Information and Communication Technology through Unmanned Aircraft Systems (UAS). Students study the history of UAS technology, aviation safety, aircraft systems, operating procedures, regulations, environmental factors, risk management, career pathways, and ICT applications related to UAS operations. In collaboration with the Unmanned Safety Institute (USI), the UAS course sequence prepares students for the USI sUAS Safety Level 1 Certification and supports preparation for the FAA Remote Pilot Certificate — Small UAS, Part 107 knowledge test.

Students gain exposure to small remotely piloted aircraft systems through classroom activities, simulation, flight-cage practice, and field-based applications as appropriate. Students also review current U.S. and international UAS developments, regulations, safety practices, industry applications, systems, programming, data, and communication protocols using reputable aviation, government, and industry resources.

Course Information

Course Length:	1 Year
Prerequisite:	None
Course Level:	Concentrator
UC:	"g" Elective
Articulated:	No
Industry Cert.:	FAA Remote Pilot Certificate - Small UAS, Part 107; USI sUAS Safety Level 1
Industry Sector:	Information and Communication Technologies
Pathway:	Information and Support Services
CALPADS:	8111

O*Net SOC Codes

15-1232	Computer User Support Specialist
15-1252	Software Engineer
19-4099.03	Remote Sensing Technician
17-3023	Electrical and Electronic Engineering Technologists and Technicians

Legend

CTE - PS	CTE Pathway Standards
CRP	Career Ready Practices
CTE - AS	CTE Anchor Standards
CCSS	Common Core State Standards
ISTE	International Society for Technology in Education

Includes updates from 25/26 ICT Advisory

Advisory Minutes

Unmanned Aircraft Systems (UAS)

Course Orientation

a. Discuss objectives for this course, including competencies, teacher expectations, classroom policies, and procedures.
b. Identify and discuss the acquisition of transferable skills (communication, collaboration, creativity, and critical thinking) and their importance to being college and career ready and for future personal and professional success.
c. Review objectives, competencies, and course syllabus.
d. Discuss student and teacher expectations, including behavior, class rules, appropriate dress, pre-course knowledge, and grading policies, including enrollment and attendance requirements and procedures, and classroom/school safety and disaster procedures.
e. Discuss next steps in course sequence related to the career pathway, the need for reinforcement of basic skills, transferrable skills, and postsecondary and career options.
f. Discuss the Big Six: Career Ready Essentials and the Standards for Career Ready Practice as they relate to this course, all aspects of the industry sector, and being college and career ready.

Big Six: Career Ready Essentials

1. Effective Communication	CTE – PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate effective verbal communication and conflict resolution skills. **b. Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.** c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships. d. Describe the impact of ineffective communication on business relationships. e. Analyze the impact of vocabulary, body language, and tone on verbal communication. f. Demonstrate active listening skills. g. Accurately interpret industry-specific written communication. h. Model responsible and effective use of various communication technologies. i. Identify valid and reliable digital reference and resource materials. j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize. k. Identify and use appropriate communication and collaboration technologies. l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.		1 2 11	2 3 4 5 7 8 9 10 11	**LS** 9-10 11-12.6 **SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.7 11-12.6	1b,c 2c 3b,c 5c 6b,c,d

2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate critical thinking skills for a variety of purposes and in different settings. **b. Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.** c. Discuss the importance of the critical thinking process to real-world applications.		2 4 5 7 9	2 3 4 5 7	**LS** 9-10 11- 12.6 **SLS** 9-10	1c 3c,d 4a-d 5c,d 6c

d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications. e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts. f. Apply divergent and convergent thinking to the development of an original idea or solution. g. Examine real-world limits to adopting ideas. h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept. i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member. j. Evaluate evidence, arguments, claims, and beliefs to identify connections. k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation. l. Produce intellectual, informational, or material products that serve an authentic purpose. m. Work effectively and respectfully with those from diverse backgrounds or cultures. n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.		10 11	8 9 11	11-12.1 11-12.1d 11-12.2 **WS** 11-12.7 11-12.6	7b,c,d
3. Leaders and Teams: Roles and Responsibilities	**CTE – PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Determine the individual and team members' roles and responsibilities. **b. Demonstrate leadership skills and qualities (i.e., reliability, negotiation skills, initiative, positive reinforcement, recognition of others' efforts, problem-solving skills, conflict resolution, and delegation).** c. Explain the importance of technical, social, and communication skills to team success. d. Compare and contrast leadership styles and their effectiveness in various situations. e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members. f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative. g. Examine situations in which a follower becomes the leader. h. Describe twenty-first-century skills required across all occupations. i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making). j. Leverage social and cultural differences to increase innovation and quality of work.		7 8 9	3 7 8 9 11	**SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.6	7a,c
4. Legal, Ethical, and Environmental Considerations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate industry specific ethical and legal practices. **b. Identify eco-friendly industry specific practices and resources.** c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations.		5 7 8	3 5 7	**WS** 11-12.6 11-12.7	2a,b 3a,b 5c

d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation. e. Summarize the ethical and legal implications of workplace discrimination and harassment. f. Explain the concept of corporate citizenship. g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment. h. Analyze current environmental laws and regulations and their impact on industry. i. Compare and contrast both society's and industry's impact on the environment.		12	8 9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2	6c
5. Personal Growth and Career Planning	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate continued personal development and growth. **b. Develop and manage a personal growth and career plan.** c. Explain the relationship between sound financial habits and financial security. d. Create and manage a personal financial plan. e. Demonstrate initiative in achieving personal and professional goals. f. Apply time management strategies to meet deadlines. g. Demonstrate a growth mindset through flexibility and a positive attitude. h. Select and demonstrate appropriate job-search and retention techniques. i. Demonstrate strategies to prepare for employment. j. Demonstrate interpersonal skills appropriate for the workplace. k. Elaborate on the importance of perseverance to personal and professional success. l. Discover personal career interests, aptitudes, and skills.		1 2 3 4 6	2 3 4 7 8 11	**LS** 9-10 11-12.6 **SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.6	1a 3a,c 4d 6a,d 7b
6. Workplace Safety and Personal Wellness	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate proper industry specific safe work practices to prevent injury or illness. **b. Assess the potential impact of goal setting on personal and professional success.** c. Describe the role of security and emergency procedures in workplace safety. d. Describe the effect of preventative measures on emergencies in the workplace. e. Identify and describe the causes, prevention, and treatment of common accidents. f. Identify local, state, and federal agencies that regulate workplace safety. g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA). h. Discuss the basics of system operations. i. Demonstrate the proper use of personal protective equipment (PPE). j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS). k. Identify hazardous materials and chemicals. l. Demonstrate proper procedures to respond to work-related accidents and injuries. m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries.		2 5 6 8 12	2 5 6 7 8 10 11	**LS** 9-10 11-12.6 **WS** 11-12.7 11-12.6 **SLS** 9-10 11-12.1 11-12.1d	1a,d 2a,d 5b

n. Demonstrate cyber ethics, cyber safety, and cybersecurity. o. Assess the potential impact of preventative physical and mental health measures on workplace safety.					
UAS Units of Instruction					
7. UAS History	**CTE-PS**	**CRP**	**CTE- AS**	**CCSS**	**ISTE**
a. Demonstrate understanding of the historical progression of flight and the aviation system that surrounds it today. b. Describe the history of UAS capability that stems from earlier research and development within the aeronautical industry. c. Understand how world events and earlier aeronautical discoveries impacted UAS research and development. d. Identify significant aircraft and iconic individuals in aviation and UAS history, such as Leonardo da Vinci, the Wright Brothers, Wernher von Braun, and other contributors to aviation and remotely piloted aircraft development. e. Describe how inter-governmental agency collaboration impacts UAS technology.		1 2 5	1 2 5	**LS** 9-10 11-12.6 **WS** 11-12.7	
8. UAS Operation Issues	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate understanding of current key concerns in UAS operations. b. Describe the role of the Federal Aviation Administration (FAA) in UAS operations. c. Discuss key issues impacting current and future civil UAS operations. d. Understand the reliability of UAS technology and discuss cybersecurity vulnerabilities inherent to unmanned versus manned flight operations and the challenge of securing UAS networks against attack. e. Explain visual line of sight (VLOS) requirements and the role of the visual observer in supporting safe UAS operations in accordance with FAA regulations. f. Discuss how weather and wind can affect UAS flying capabilities. g. Explain how to manage wind forecasting using sites such as the Aviation Weather Channel, NOAA, UAV Forecast, NOTAM. h. Describe how UAS operating limitations relating to speed, weight, altitude, and maneuverability are set by manufacturers of the UAS. i. Discuss how operational goals dictate the type of aircraft needed, and how variables such as weather conditions, day versus night flying, and other factors can affect overall cost and quality of the data recorded. j. Identify common organizational, technical, and financial risks associated with the implementation and use of information and communication systems.	A1.1 A1.2 A5.1	1 2 5 11 12	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

k. Discuss current Part 107 operational requirements and limitations, including Remote ID, night operations, operations over people or moving vehicles, controlled airspace authorization, and waiver requirements.					
9. UAS as Robotic Aircraft	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge of basic aviation principles and its relationship to UAS. b. Explain the robotic capabilities of a UAS. c. Identify major components of an aircraft, including UAS. d. Compare and contrast aircraft aerodynamics and performance, and identify the four forces (lift, thrust, drag, weight) that act on an aircraft during flight. e. Compare the advantages, disadvantages, performance characteristics, payload considerations, and weight-and-balance limitations of different UAS types and configurations. f. Describe the basic concepts of Bernoulli's Principle and Newton's Laws. g. Compare manned and unmanned aircraft in maneuverability, cost, safety, risk, and endurance.	A1.2 A4.4	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
10. Command-and-Control Links Connecting the Pilot to UAS	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate basic knowledge of UAS command-and-control links and related data systems, including telemetry, image, video, and control information.** b. Describe how UAS communication works and discuss key challenges in the current design of aeronautical communication systems. c. Explain four types of data link hardware configurations- system architecture, communication subsystem. d. Analyze communication link types and operating conditions, including line of sight (LOS), beyond visual line of sight (BVLOS), and tactical or mission-specific data communications. e. Correctly define RF communications and the use of carrier waves- Ku Bands, K band, S, L bands, C band, and X band. f. Explain datalink communication authorization methods and procedures, including datalink communication language, terms, and system information. g. Describe aeronautical datalink challenges- Long Distance, Frequency Spectrum, High Speed. h. Describe the importance of detect-and-avoid capabilities in helping UAS maintain separation from other aircraft, obstacles, and hazards.	A3.1 A6.4	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
11. Career Opportunities with UAS	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge about the impact UAS and drone operations have on the current economy and workforce. b. Identify the roles and responsibilities, personal characteristics, psychological qualities, training, and certification requirements for the following public service occupations: Law	A1.0 A1.1 A5.1	1 2 3 5	1 2 3 5	**LS** 9-10 11-12.6	

Enforcement UAS Pilot, Loss Prevention Specialist UAS Operator, Military Service – UAS Team Member, Homeland Security UAS Operator c. Discuss recent developments and the contributions UAS provide to non-public safety industries, such as transportation, agriculture, infrastructure inspection, utilities, real estate, logistics, mapping, and business services. d. Compare and contrast roles and responsibilities for public safety and non-public safety certificated remote pilots or UAS crew members. e. Discuss the importance of maintaining professional conduct as a certificated remote pilot or UAS crew member. f. Explain the contributions made by UAS in commercial, industrial, and military applications. g. Describe the contribution of UAS and the role UAS plays in academic or scientific applications. h. Explore the role of UAS in different industries, including filmmaking, real estate, agriculture, construction, infrastructure inspection, utilities, public safety support, mapping, surveying, and industrial inspection.		8 11	8 11	**SLS** 11-12.2 11-12.1d **WS** 11-12.7	
12. Stages of a UAS Operation	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge of the operational stages of an UAS operation. b. Discuss the steps required for preflight planning and briefing, including aircraft inspection, assessment of the operating environment, review of local weather conditions, airspace and flight restrictions, identification of nearby persons, property, and ground hazards, crew briefing, and equipment checks. c. Explain UAS platforms, to include unmanned aerial vehicles, ground control stations, and ground support equipment. d. Describe flight procedures for Start, Take-off, In-Flight, Landing, and Shutdown. e. Identify post-flight operations, including post-flight checklist procedures, documentation of anomalies or maintenance needs, flight area/perimeter closure, emergency response review, and accident/incident reporting. f. Use technical writing and communication skills to work effectively with diverse groups of people, including those of varying technical abilities.	A7.3 A8.6	1 2 5	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
13. UAS Rules, Regulations, and Limitations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**

a. Demonstrate understanding of the current and potential capabilities and future trends in UAS. **b. Demonstrate knowledge of the political, legal, economic, as well as possible ethical and moral issues relating to UAS operations.** c. Explain current FAA Part 107 regulations specific to small UAS operations, including remote pilot certification, operating rules, airspace authorization, and waiver requirements. d. Describe technological limitations of current UAS systems and discuss how cutting-edge technology will impact its future capabilities. e. Explain the development of governmental regulations and agency protocols that currently impact UAS. f. Describe UAS operating limitations under Part 107, including aircraft weight, altitude, speed, visual line of sight, operations over people or moving vehicles, night operations, and Remote ID requirements. g. Discuss the National Airspace System as it relates to UAS operations, including airspace classifications, airports and heliports, air traffic control authorization, UAS Facility Maps or LAANC, Notices to Air Missions (NOTAMs), and other flight restrictions. h. Discuss ethical, legal, and privacy considerations for UAS operations, including surveillance, data collection, law enforcement use, warrant considerations, and Fourth Amendment protections.	A5.1	1 2 5 8 12	1 2 5 8 11	**LS** 9-10 11-12.6 **SLS** 11-12.1d **WS** 11-12.7	
14. Impact of Environmental Factors on UAS Operations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate understanding of the physical environment and its impact on the safe flight of UAS.** b. Explain the importance of situational awareness when operating beyond visual line of sight (BVLOS) or in complex terrain, including urban areas, mountains, canyons, and other challenging environments. c. Explain the role of UAS Traffic Management (UTM) in providing services such as airspace design, dynamic geo-fencing, severe weather and wind avoidance, congestion management, terrain avoidance, route planning, sequencing, and spacing, and contingency management. d. Discuss ways in which UAS are being used to help the environment, such as aerial mapping and nature monitoring, renewable energy maintenance, disaster relief, wildlife protection, and agricultural sustainability solutions.		1 2 5	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
15. Safety Management	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate knowledge of the inherent risks of UAS operations and the importance of safety management systems and risk management practices for safe, legal, and professional UAS operations.** b. Compare and contrast 'risk' and 'hazard' and discuss the analysis tools available to make informed decisions to balance risk exposure with mission benefits.	A1.2 A5.3 A8.6	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS**	

c. Describe the factors of strategic risk management and explain how high-level risk assessment supports mission planning, operational decision-making, and hazard mitigation. d. Explain deliberate risk management, including the multi-step, analytical sequential process, and its linkage to strategic risk management. e. Explain how time-critical risk management is used to identify hazards, assess risks, and implement controls to reduce risk associated with UAS. f. Discuss the essential elements of a safety management system (SMS). g. Compare and contrast allowed risk and acceptable risk and the evaluation process to determine each. h. Explain emergency procedures and reporting requirements for common UAS malfunctions or incidents, including loss of power, deteriorating weather, lost or degraded GPS signal, lost command-and-control link, flyaway, airspace conflict or encroachment, and reportable safety events.				11-12.7	
16. Information and Communication Technology	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Create professional-quality media, images, video clips, and data products using UAS technology and appropriate software tools. **b. Follow laws, regulatory guidelines, policies, and procedures to ensure the security, privacy, and integrity of UAS information systems, flight data, media files, and related digital assets.** c. Demonstrate how to communicate and interpret information clearly in UAS industry-standard visual and written formats. d. Analyze UAS hardware, software, data, and communication systems to best meet the needs of users, customers, and operational objectives. e. Create effective interfaces between humans and technology. f. Install equipment, assemble hardware, configure software or firmware, and perform system tests using appropriate tools and technology. g. Use a logical structured approach to isolate and identify the source of technical problems and propose solutions. h. Use specific problem-solving strategies appropriate to troubleshooting, eliminating possibilities, or guess and check when working with UAS technologies.	A5.1 A6.1 A6.3	1 2 4 5 10 11	1 2 4 5 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

A-G Approved Key Assignments	
1.	Electronic Portfolio- An e-portfolio will be developed and used throughout the UAS course sequence to document the journey of learning in the drone arena. Students will be responsible for updating their e-portfolio regularly and be ready to present it for school, parents, etc. presentations. A student's e-portfolio should highlight their creative skills and present information in their individual style. It will serve as a documented compilation of their journey in UAS studies and be invaluable for future interviews to present evidence of a student's experience and capabilities. *Unit(s) 7*
2.	Early Pioneers- Select one aviation pioneer from a teacher supplied list to present a 3-5-minute overview of their personal challenges, defeats, hazards, and victories. This simple, short briefing is the first of several briefings to build on the ability to speak in front of others and share information in a logical, easy to understand format. *Unit(s) 7*
3.	Small Flight Cage- As a team design and build a small Flight Cage utilizing netting, PVC pipe, cording, zip ties, etc. This first cage will be large enough to fly the small classroom drones in while standing outside the netting and be disassembled and stored as needed. *Unit(s) 7*
4.	Simulator Flying- To prepare for hands-on flying, students will participate in computer-based flight simulator instruction. This training provides continuous feedback, helps develop positive habits, and focuses on the concept of remote flying. Competitions can be encouraged using feedback from simulator scenarios. Khan Academy/MIT+K12 Flight Video: https://www.khanacademy.org/partner-content/mit-k12/mit-k12-science/mit-k12-physics/v/indoor-flying-robots . Students may also use FAA Part 107 study materials to connect simulator practice to remote pilot knowledge areas. *Unit(s) 8*
5.	Classroom UAS Flying- Using basic miniature classroom drones, students will gain practical experience of a human/robotic system working together. As students develop basic flight skills and become comfortable with controlling a drone, an obstacle course will be introduced to further develop technique. *Unit(s) 8*
6.	Where Are the Drones? - To develop an in-depth understanding of the current and potential roles of UAS and drone operations, students will view short videos, provided by the teacher, from commercial and government UAS efforts. Students will identify cost and human benefits, current and potential future uses of drones, and brainstorm ideas for future uses and possible careers within the field. *Unit(s) 8*
7.	Civilian Careers- Conduct research to create a list of civilian career opportunities for remote pilots (minimum of 3 careers). Each career listed will include the following minimum requirements: Position title, industry sector, work environment, skills and equipment required, and potential salary range. Students will prepare and present their findings, and the presentations will be uploaded on the school/class webpage and made available to the community at large. *Unit(s) 9*
8.	Government Careers- Conduct research to create a list of government career opportunities for remote pilots (minimum of 3 careers). Each career listed will include the following minimum requirements: Position title, industry sector, work environment, skills and equipment required, and potential salary range. Students will prepare and present their findings, and the presentations will be uploaded on the school/class webpage and made available to the community at large. *Unit(s) 9*
9.	FAA Resource- To become familiar with using the FAA website as a resource, students will create a Jeopardy or Trivial Pursuit style game from content found on the FAA website. Team competitions, allowing use of the website, will strengthen students' ability to locate information quickly and efficiently. https://www.faa.gov *Unit(s) 10*
10.	Large Flight Cage- As a team design and build a large flight cage that can accommodate up to 3 drones in flight. The flight cage will then be used for flight competitions that focus on thought processes, awareness, and safety. Teams will demonstrate all stages of operations - support, flight operations, team management, equipment preparation, and maintenance, team pre- and post-flight brief. *Unit(s) 10*

11.	What to do About Risk- Using the International Civil Aviation Organization definition of SRM: "Safety risk management encompasses the assessment and mitigation of safety risks." Students will investigate and analyze a current aviation accident, or a teacher provided example to better understand how Safety Management is vital to improving safety in the airspace. Each student will create a Deliberate Risk Analysis chart that defines the following five steps using their own examples. • Hazard Identification • Hazard Assessment • Analyze Risk Controls • Implement Mitigators • Supervise, Execute and Record Students will present their Deliberate Risk Analysis chart to the class and it will be included in their e-portfolio. *Unit(s) 11*
12.	Learning from Errors- Students will submit a quick video, picture or article highlighting a UAS in a challenging situation (crash, violating the law, improper use, etc.) The submissions will compete for the 'Oops Award' which will help highlight what can go wrong when humans make mistakes. The submissions will be presented to the entire class with an example of what could have been done to prevent the situation. Students will vote to decide the most cringe worthy winner. *Unit(s) 11*
13.	Challenged Flying- Compete to fly in the large flying cage. In teams, students will develop a minimum of ten questions that the other team will have to answer before they can fly. Question topics can include weather, visual line of sight, electronic interference, distance to nearby airports, controlled airspace, Remote ID, FAA-approved B4UFLY service providers, and other flight restrictions. *Unit(s) 11*
14.	Impact of the UAS field on Society (Final)- In teams, students will debate a topic related to drones. One team will take the pro-surveillance stance and the other will take the pro-privacy stance. Possible topics include drones for law enforcement, drone-free zones, laws restricting drones, or drones on campus. Students will be provided with the topic and time to prepare possible counterarguments. Each student will then write a one-page essay on their thoughts about UAS technology in society.

Standards Alignment

The curricula have been aligned with the CTE Model Curriculum Standards released in 2013. Each industry sector was updated to meet the increased rigor and relevancy requirements of the Common Core State Standards. The curriculum also includes the new Standards for Career Ready Practices.

Standards for Career Ready Practice

1. *Apply appropriate technical skills and academic knowledge.*
2. *Communicate clearly, effectively, and with reason.*
3. *Develop an education and career plan aligned with personal goals.*
4. *Apply technology to enhance productivity.*
5. *Utilize critical thinking to make sense of problems and persevere in solving them.*
6. *Practice personal health and understand financial literacy.*
7. *Act as a responsible citizen in the workplace and the community.*
8. *Model integrity, ethical leadership, and effective management.*
9. *Work productively in teams while integrating cultural and global competence.*
10. *Demonstrate creativity and innovation.*
11. *Employ valid and reliable research strategies.*
12. *Understand the environmental, social, and economic impacts of decisions.*

CTE Anchor Standards—Common Core English Language Arts Alignment

Anchor Standard 1: Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the industry sector alignment matrix for identification of standards. Note: alignment listed within each sector.

Anchor Standard 2: Communications

Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. LS 9-10, 11-12.6

Anchor Standard 3: Career Planning and Management

Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SLS 11-12.2

Anchor Standard 4: Technology

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

Anchor Standard 5: Problem Solving and Critical Thinking

Writing Standard: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow, or broaden the inquiry when appropriate, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WS 11-12.7

Anchor Standard 6: Health and Safety

Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, keywords, and other domain-specific words and phrases as they are used in a specific scientific or technical context. RSTS 9-10, 11-12.4

Anchor Standard 7: Responsibility and Flexibility

Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively. SLS 9-10, 11-12.1

Anchor Standard 8: Ethics and Legal Responsibilities

Speaking and Listening Standard: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the work. SLS 11-2.1d

Anchor Standard 9: Leadership and Teamwork

Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed. SLS 11-12.1b

Anchor Standard 10: Technical Knowledge and Skills

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. WS 11-12.6

Anchor Standard 11: Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in the classroom, laboratory, and workplace settings, and the career technical student organization. Note: no alignment evident for this standard. WS 11-12.6

CTE Model Curriculum Standards—Industry Sectors and Pathways

Information Support and Services Pathway

A. Information Support and Services Pathway

A1.0 *Describe the role of information and communication technologies in organizations.*

A1.1 *Describe how technology is integrated into business processes.*

A1.2 *Identify common organizational, technical, and financial risks associated with the implementation and use of information and communication systems.*

A3.1 *Identify and apply multiple ways to transfer information and resources (e.g., text, data, audio, video, still images) between software programs and systems.*

A4.4 *Evaluate the systems-development life cycle and develop appropriate plans to maintain a given system after assessing its impact on resources and total cost of ownership (TCO).*

A5.1 *Follow laws, regulatory guidelines, policies, and procedures to ensure the security and integrity of information systems.*

A5.3 *Take preventative measures to reduce security risks (e.g., strong passwords, avoid social engineering ploys, limit account permissions).*

A6.1 *Use available resources to identify and resolve problems using knowledge bases, forums, and manuals.*

A6.3 *Use specific problem-solving strategies appropriate to troubleshooting, eliminating possibilities, or guess and check.*

A6.4 *Evaluate support needs for different data and systems configurations.*

A7.3 *Use technical writing and communication skills to work effectively with diverse groups of people, including users with less technical abilities.*

A8.6 *Use a systematic method of continual improvement; plan, do, check, act (PDCA), total quality (TQ), or Six Sigma.*

ISTE Standards for Students

1. Empowered Learner- Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

a) Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process itself to improve learning outcomes.

b) Students build networks and customize their learning environments in ways that support the learning process.

c) Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

d) Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen- Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

a) Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

b) Students engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices.

c) Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

d) Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3.Knowledge Constructor- Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

a) Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

b) Students evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources.

c) Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

d Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

4. Innovative Designer- Students use a variety of technologies within a design process to identify and solve problems creating new, useful, or imaginative solutions.

a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

b) Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

c) Students develop, test, and refine prototypes as part of a cyclical design process.

d) Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

5. Computational Thinker- Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

a) Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.

b) Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

d) Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator- Students communicate clearly and express themselves creatively for a variety of purposes using platforms, tools, styles, formats, and digital media appropriate for their goals.

a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

b) Students create original works or responsibly repurpose or remix digital resources into new creations.

c) Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

d) Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator- Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

a) Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

b) Students use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.

c) Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

d) Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.