



## Regional Occupational Program

# Unmanned Aircraft Systems (UAS) 2 A-G BUS: High Tech Flight 2026-2027

### COURSE DESCRIPTION

This course builds upon UAS 1 to expand students' understanding of Unmanned Aircraft Systems (UAS), with emphasis on the remote pilot, crew roles, human factors, safety management, mission planning, and team-based field operations. Students apply classroom learning and outside resources through a Flight Mission Project that integrates UAS operations, crew resource management, risk management, regulatory awareness, and professional flight-support procedures.

Students have opportunities to pilot and support professional UAS operations through classroom activities, simulation, flight-cage practice, field-based applications as appropriate, guest speakers, and industry field trips. The course supports preparation for the USI sUAS Safety Level 1 Certification and the FAA Remote Pilot Certificate - Small UAS, Part 107 knowledge test. In addition, this course provides students with an overview of business and marketing fundamentals for owning, operating, or supporting a UAS/drone business.

#### Course Information

Course Length: 1 Year  
 Prerequisite: None  
 Course Level: Capstone  
 UC: Yes G - Elective  
 Articulated: No  
 Industry Cert.: FAA Remote Pilot Certificate - Small UAS, Part 107; USI sUAS Safety Level 1 Certification  
 Industry Sector: Business and Finance  
 Pathway: Business Management  
 CALPADS: 7412

#### O\*Net SOC Codes

11-1021 General & Operations Manager  
 13-2023 Appraisers and Assessors for Real Estate  
 11-2021 Marketing Manager  
 19-4099 Remote Sensing 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 the 25/26 Marketing Sales & Services and Business & Finance Advisory*

[Advisory Minutes](#)

## UAS 2: High Tech Flight

### 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
<ol style="list-style-type: none"> <li>a. <b>Demonstrate effective verbal communication and conflict resolution skills.</b></li> <li>b. <b>Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.</b></li> <li>c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships.</li> <li>d. Describe the impact of ineffective communication on business relationships.</li> <li>e. Analyze the impact of vocabulary, body language, and tone on verbal communication.</li> <li>f. Demonstrate active listening skills.</li> <li>g. Accurately interpret industry-specific written communication.</li> <li>h. Model responsible and effective use of various communication technologies.</li> <li>i. Identify valid and reliable digital reference and resource materials.</li> <li>j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize.</li> <li>k. Identify and use appropriate communication and collaboration technologies.</li> <li>l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.</li> </ol>		<u>1</u> <u>2</u> <u>11</u>	<u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u> <u>11</u>	<u>LS</u> <u>9-10</u> <u>11-12.6</u>  <u>SLS</u> <u>11-12.2</u> <u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u>  <u>WS</u> <u>11-12.7</u> <u>11-12.6</u>	<u>1b,c</u> <u>2c</u> <u>3b,c</u> <u>5c</u> <u>6b,c,d</u>
2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
<ol style="list-style-type: none"> <li>a. <b>Demonstrate critical thinking skills for a variety of purposes and in different settings.</b></li> <li>b. <b>Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.</b></li> <li>c. Discuss the importance of the critical thinking process to real-world applications.</li> </ol>		<u>2</u> <u>4</u> <u>5</u> <u>7</u> <u>9</u>	<u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>7</u>	<u>LS</u> <u>9-10</u> <u>11-12.6</u>  <u>SLS</u>	<u>1c</u> <u>3c,d</u> <u>4a-d</u> <u>5c,d</u> <u>6c</u>

<ul style="list-style-type: none"> <li>d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications.</li> <li>e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts.</li> <li>f. Apply divergent and convergent thinking to the development of an original idea or solution.</li> <li>g. Examine real-world limits to adopting ideas.</li> <li>h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept.</li> <li>i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member.</li> <li>j. Evaluate evidence, arguments, claims, and beliefs to identify connections.</li> <li>k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation.</li> <li>l. Produce intellectual, informational, or material products that serve an authentic purpose.</li> <li>m. Work effectively and respectfully with those from diverse backgrounds or cultures.</li> <li>n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.</li> </ul>		<u>10</u> <u>11</u>	<u>8</u> <u>9</u> <u>11</u>	<u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u> <u>11-12.2</u>  <u>WS</u> <u>11-12.7</u> <u>11-12.6</u>	<u>7b,c,d</u>
<b>3. Leaders and Teams: Roles and Responsibilities</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>
<ul style="list-style-type: none"> <li>a. <b>Determine the individual and team members' roles and responsibilities.</b></li> <li>b. <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).</b></li> <li>c. Explain the importance of technical, social, and communication skills to team success.</li> <li>d. Compare and contrast leadership styles and their effectiveness in various situations.</li> <li>e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members.</li> <li>f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative.</li> <li>g. Examine situations in which a follower becomes the leader.</li> <li>h. Describe twenty-first-century skills required across all occupations.</li> <li>i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making).</li> <li>j. Leverage social and cultural differences to increase innovation and quality of work.</li> </ul>		<u>7</u> <u>8</u> <u>9</u>	<u>3</u> <u>7</u> <u>8</u> <u>9</u> <u>11</u>	<u>SLS</u> <u>11-12.2</u> <u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u>  <u>WS</u> <u>11-12.6</u>	<u>7a,c</u>
<b>4. Legal, Ethical, and Environmental Considerations</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>
<ul style="list-style-type: none"> <li>a. <b>Demonstrate industry specific ethical and legal practices.</b></li> <li>b. <b>Identify eco-friendly industry specific practices and resources.</b></li> <li>c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations.</li> </ul>		<u>5</u> <u>7</u> <u>8</u>	<u>3</u> <u>5</u> <u>7</u>	<u>WS</u> <u>11-12.6</u> <u>11-12.7</u>	<u>2a,b</u> <u>3a,b</u> <u>5c</u>

<ul style="list-style-type: none"> <li>d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation.</li> <li>e. Summarize the ethical and legal implications of workplace discrimination and harassment.</li> <li>f. Explain the concept of corporate citizenship.</li> <li>g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment.</li> <li>h. Analyze current environmental laws and regulations and their impact on industry.</li> <li>i. Compare and contrast both society's and industry's impact on the environment.</li> </ul>		<u>12</u>	<u>8</u> <u>9</u> <u>11</u>	<u>SLS</u> <u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u> <u>11-12.2</u>	<u>6c</u>
<b>5. Personal Growth and Career Planning</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>
<ul style="list-style-type: none"> <li>a. <b>Demonstrate continued personal development and growth.</b></li> <li>b. <b>Develop and manage a personal growth and career plan.</b></li> <li>c. Explain the relationship between sound financial habits and financial security.</li> <li>d. Create and manage a personal financial plan.</li> <li>e. Demonstrate initiative in achieving personal and professional goals.</li> <li>f. Apply time management strategies to meet deadlines.</li> <li>g. Demonstrate a growth mindset through flexibility and a positive attitude.</li> <li>h. Select and demonstrate appropriate job-search and retention techniques.</li> <li>i. Demonstrate strategies to prepare for employment.</li> <li>j. Demonstrate interpersonal skills appropriate for the workplace.</li> <li>k. Elaborate on the importance of perseverance to personal and professional success.</li> <li>l. Discover personal career interests, aptitudes, and skills.</li> </ul>		<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>6</u>	<u>2</u> <u>3</u> <u>4</u> <u>7</u> <u>8</u> <u>11</u>	<u>LS</u> <u>9-10</u> <u>11-12.6</u>  <u>SLS</u> <u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u> <u>11-12.2</u>  <u>WS</u> <u>11-12.6</u>	<u>1a</u> <u>3a,c</u> <u>4d</u> <u>6a,d</u> <u>7b</u>
<b>6. Workplace Safety and Personal Wellness</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>
<ul style="list-style-type: none"> <li>a. <b>Demonstrate proper industry specific safe work practices to prevent injury or illness.</b></li> <li>b. <b>Assess the potential impact of goal setting on personal and professional success.</b></li> <li>c. Describe the role of security and emergency procedures in workplace safety.</li> <li>d. Describe the effect of preventative measures on emergencies in the workplace.</li> <li>e. Identify and describe the causes, prevention, and treatment of common accidents.</li> <li>f. Identify local, state, and federal agencies that regulate workplace safety.</li> <li>g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA).</li> <li>h. Discuss the basics of system operations.</li> <li>i. Demonstrate the proper use of personal protective equipment (PPE).</li> <li>j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS).</li> <li>k. Identify hazardous materials and chemicals.</li> <li>l. Demonstrate proper procedures to respond to work-related accidents and injuries.</li> <li>m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries.</li> </ul>		<u>2</u> <u>5</u> <u>6</u> <u>8</u> <u>12</u>	<u>2</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>10</u> <u>11</u>	<u>LS</u> <u>9-10</u> <u>11-12.6</u>  <u>WS</u> <u>11-12.7</u> <u>11-12.6</u>  <u>SLS</u> <u>9-10</u> <u>11-12.1</u> <u>11-12.1d</u>	<u>1a,d</u> <u>2a,d</u> <u>5b</u>

<p>n. Demonstrate cyber ethics, cyber safety, and cybersecurity.</p> <p>o. Assess the potential impact of preventative physical and mental health measures on workplace safety.</p>					
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**UAS 2: High Tech Flight**

<b>7. UAS Personnel</b>	<b>CTE-PS</b>	<b>CRP</b>	<b>CTE- AS</b>	<b>CCSS</b>	<b>ISTE</b>
<p><b>a. Describe the human factors involved in UAS operations, including:</b></p> <ol style="list-style-type: none"> <li>1. Processing information</li> <li>2. Human performance efficiencies</li> <li>3. Cognitive performance moderators and errors</li> <li>4. Humans and automation</li> <li>5. Human-computer interface design</li> </ol> <p><b>b. Identify the roles and responsibilities, personal characteristics, psychological qualities, training, and certification requirements for UAS personnel, including the remote pilot in command, person manipulating the flight controls, visual observer, mission/flight operations support personnel, payload or sensor operator, maintenance/support personnel, and data-processing or mission-analysis personnel.</b></p>	<u>A1.1</u>	<u>1</u> <u>2</u> <u>5</u> <u>11</u> <u>12</u>	<u>1</u> <u>2</u> <u>5</u>	<u>LS</u> <u>9-10</u>  <u>WS</u> <u>11-12.7</u>	
<b>8. Processing Information for UAS Operations</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>
<p><b>a. Demonstrate understanding about the human brain and how its information-processing system affects response to stimuli, mental development, and memory.</b></p> <p><b>b. Describe human sensory reception, including sight, hearing, smell, taste, and touch, and how humans sense and react to external and internal environments.</b></p> <p><b>c. Discuss how a person’s experiences, beliefs, and culture affect or shape their perception of the world around them.</b></p> <p><b>d. Identify key processing points in working memory and long-term memory; identify and explain the biological processes related to how memory is stored.</b></p> <p><b>e. Describe how the human mind changes to perform new tasks- the role of prior knowledge and the importance of a positive growth mindset.</b></p> <p><b>f. Explain how task-switching and multitasking are executive functions that involve the ability to unconsciously and consciously shift attention between one task and another.</b></p> <p><b>g. Discuss the role of the basal ganglia in habit formation and how new learned tasks emerge through associative learning to become habits.</b></p> <p><b>h. Identify the cognitive, emotional, and relational characteristics that differentiate an expert or master compared to a novice or beginning learner.</b></p>		<u>1</u> <u>2</u> <u>5</u> <u>11</u> <u>12</u>	<u>1</u> <u>2</u> <u>5</u>	<u>LS</u> <u>9-10</u>  <u>WS</u> <u>11-12.7</u>	
<b>9. Positive Aircraft Performance</b>	<b>CTE - PS</b>	<b>CRP</b>	<b>CTE - AS</b>	<b>CCSS</b>	<b>ISTE</b>

<p>a. <b>Demonstrate understanding about how developing coping skills improve mental and emotional well-being and are tools that help humans adjust to stressful, difficult, or traumatic situations.</b></p> <p>b. Describe the benefits of experience and the role of human factors found in safe UAS operations.</p> <p>c. Understand key concepts of situation assessment, planning, and management as it relates to risk avoidance and safe UAS operations.</p> <p>d. Explain the remote pilot’s need for timely, specific, and accurate information to address airspace, weather, operational, and safety challenges.</p> <p>e. Compare and contrast how the internal environment (aircraft position, procedures, checklists, automation, aircraft attitude, and performance) and the external environment (airspace, meteorological conditions, terrain, obstacles, and the operating culture) impact threat and error management.</p> <p>f. Discuss the human factors such as failures of compliance, lack of effective communication, lack of procedures, or lack of proficiency or experience and how they contribute to risk, errors, and poor decision-making.</p>		<u>1</u> <u>2</u> <u>5</u> <u>11</u> <u>12</u>	<u>1</u> <u>2</u> <u>5</u> <u>11</u>	<u>LS</u> <u>9-10</u>  <u>WS</u> <u>11-12.7</u>	
<p><b>10. Humans and Automation</b></p>	<p>CTE - PS</p>	<p>CRP</p>	<p>CTE - AS</p>	<p>CCSS</p>	<p>ISTE</p>
<p>a. <b>Demonstrate understanding that UAS operations are part of the National Airspace System regulated by the Federal Aviation Administration, which is responsible for aviation safety and regulatory oversight.</b></p> <p>b. Compare and contrast the advantages and disadvantages of operations performed by technology vs. humans.</p> <p>c. Explain how the role of human work changes from production to overseeing performance in a highly automated work environment.</p> <p>d. Describe the level of information the UAS operator requires to be successful.</p> <p>e. Describe how unmanned aircraft systems are poised to revolutionize entire industries, if not society itself.</p> <p>f. Discuss how the remote pilot and UAS crew skill set has shifted in human-automation work environments to include judgment, adaptability, logic, systems monitoring, and decision-making.</p> <p>g. Describe models of intelligent behavior and what distinguishes humans from machines.</p>	<p><u>A7.3</u></p>	<u>1</u> <u>2</u> <u>5</u> <u>11</u>	<u>1</u> <u>2</u> <u>5</u> <u>11</u>	<u>LS</u> <u>9-10</u>  <u>WS</u> <u>11-12.7</u>	
<p><b>11. Personnel that Support the UAS Operation</b></p>	<p>CTE - PS</p>	<p>CRP</p>	<p>CTE - AS</p>	<p>CCSS</p>	<p>ISTE</p>
<p>a. <b>Demonstrate understanding of how UAS personnel use crew resource management (CRM) to reduce errors that can have substantial negative impact or loss of property or life.</b></p> <p>b. Identify how CRM training procedures and the effective use of available resources improves crew performance to be successful.</p> <p>c. Explain how independent systems make up the larger UAS flight operation.</p>	<p><u>A1.3</u>  <u>A2.0</u>  <u>A2.1</u></p>	<u>1</u> <u>2</u> <u>5</u> <u>11</u> <u>12</u>	<u>1</u> <u>2</u> <u>5</u> <u>11</u>	<u>LS</u> <u>9-10</u>  <u>WS</u> <u>11-12.7</u>	

<ul style="list-style-type: none"> <li>d. Identify UAS operations objectives and how the objectives are addressed and achieved.</li> <li>e. Describe the use of CRM (foci on interpersonal communication, leadership, and decision making) and how it is used for improving air safety.</li> <li>f. Describe how tactics, techniques, and procedures (TTP) help achieve maximum efficiency of the UAS mission.</li> <li>g. Understand situational awareness (SA) and specifically how to use the observe, orient, decide, and act (OODA) loop.</li> </ul>					
<b>12. How UAS Personnel Make Decisions</b>	CTE - PS	CRP	CTE - AS	CCSS	ISTE
<ul style="list-style-type: none"> <li>a. <b>Demonstrate understanding about the important role of aeronautical decision-making (ADM) and that even ‘small’ decisions can have a large impact on flight safety.</b></li> <li>b. Identify and discuss the steps in the Aeronautical Decision-Making (ADM) systematic approach to aeronautical safety.</li> <li>c. Describe antidotes to hazardous attitudes that remote pilots and UAS crew members must recognize and manage to support flight safety.</li> <li>d. Analyze and evaluate types of stress remote pilots and UAS crew members may need to manage, including physical, physiological, and psychological stressors.</li> <li>e. Explain the DECIDE decision making model.</li> <li>f. Explore the preflight risk management process for focusing on hazards using the POSE checklist.</li> <li>g. Describe the TEAM mnemonic used to produce a risk mitigation list.</li> </ul>		<u>1</u> <u>2</u> <u>5</u> <u>8</u> <u>11</u> <u>12</u>	<u>1</u> <u>2</u> <u>5</u> <u>8</u> <u>11</u>	<u>LS</u> <u>9-10</u>  <u>SLS</u> <u>11-12.1d</u>  <u>WS</u>  <u>11-12.7</u>	
<b>13. Safety Management</b>	CTE - PS	CRP	CTE - AS	CCSS	ISTE
<ul style="list-style-type: none"> <li>a. <b>Demonstrate understanding that safety and a safety mindset are required in every aspect of UAS flight and from every member of the flight crew.</b></li> <li>b. Identify strategies that help instill a safety mindset in the workplace.</li> <li>c. Discuss the focus from the government and industry on the importance of aeronautical safety.</li> <li>d. Explain the responsibilities of an FAA certificated remote pilot, including maintaining aeronautical knowledge recency, completing required recurrent training, following operating rules, and maintaining safe flight practices.</li> <li>e. Discuss the safety assurance process for UAS operations.</li> <li>f. Describe how to identify and resolve operational safety hazards.</li> <li>g. Explain the process for UAS safety event reporting, accident or incident review, data collection and analysis, and appropriate debriefing processes to help prevent future occurrences.</li> <li>h. Identify the types of risk management data and how the data is collected and analyzed.</li> </ul>	<u>A6.0</u> <u>A6.1</u>	<u>1</u> <u>2</u> <u>5</u> <u>6</u> <u>11</u>	<u>1</u> <u>2</u> <u>5</u> <u>6</u> <u>11</u>	<u>LS</u> <u>9-10</u>  <u>RSTS</u> <u>9-10</u> <u>11-12.4</u>  <u>WS</u> <u>11-12.7</u>	
<b>14. UAS Key Issues</b>	CTE - PS	CRP	CTE - AS	CCSS	ISTE

<p>a. <b>Demonstrate understanding about key issues impacting current and future civil UAS operations.</b></p> <p>b. Discuss lack of access to appropriate aeronautical radio frequency spectrum and infrastructure.</p> <p>c. Explain inconsistent patchwork of FAA, state, and local regulations.</p> <p>d. Discuss UAS traffic management in the crowded future of aviation.</p> <p>e. Discuss key issues impacting current and future civil UAS operations, including aeronautical radio frequency spectrum and infrastructure, state and local regulatory coordination, unsafe or noncompliant operators, Remote ID, UAS Traffic Management (UTM), beyond visual line of sight (BVLOS) operations, and FAA authorization or approval processes.</p>	<p><a href="#">A8.3</a></p>	<p><u>1</u> <u>2</u> <u>5</u> <u>11</u></p>	<p><u>1</u> <u>2</u> <u>5</u> <u>11</u></p>	<p><a href="#">LS</a> <a href="#">9-10</a></p> <p><a href="#">WS</a> <a href="#">11-12.7</a></p>	
<p><b>15. UAS in the Business World</b></p>	<p>CTE - PS</p>	<p>CRP</p>	<p>CTE - AS</p>	<p>CCSS</p>	<p>ISTE</p>
<p>a. <b>Discuss the certifications, registrations, authorizations, waivers, Remote ID requirements, and local, state, and federal regulations that may apply when forming or operating a UAS business.</b></p> <p>b. Determine the type of business organization most appropriate for a UAS business.</p> <p>c. Research risk management practices and insurance coverage, including UAS hull, liability, and business-risk insurance, as they relate to a UAS business.</p> <p>d. Develop a continuing education plan for a drone business operator.</p> <p>e. Examine technological trends and analyze the impact of technological innovations on the marketing and distribution of goods and services within a UAS business.</p> <p>f. 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.</p> <p>g. Identify key management skills needed to function effectively, efficiently, and collaboratively in a business environment.</p> <p>h. Discuss the economic principles and concepts fundamental to a drone business operation.</p> <p>i. Analyze management theories and their application within a UAS business environment.</p> <p>j. Develop a business plan, including an executive summary, organizational structure, market analysis, SWOT analysis, operating procedures, regulatory compliance plan, risk-management plan, financial data, and feasibility report, and discuss these components through the lens of starting a UAS business.</p> <p>k. Using the business plan market analysis to develop a marketing plan (target market, demographics, goals) that includes promotional strategies.</p>	<p><a href="#">A1.2</a> <a href="#">A1.4</a> <a href="#">A1.5</a> <a href="#">A2.1</a> <a href="#">A6.2</a> <a href="#">A7.3</a> <a href="#">A8.0</a> <a href="#">A8.1</a> <a href="#">A8.2</a> <a href="#">A8.3</a> <a href="#">A8.4</a> <a href="#">A8.5</a></p>	<p><u>1</u> <u>4</u> <u>5</u> <u>11</u></p>	<p><u>1</u> <u>2</u> <u>4</u> <u>5</u> <u>10</u> <u>11</u></p>	<p><a href="#">LS</a> <a href="#">9-10</a></p> <p><a href="#">WS</a> <a href="#">11-12.6</a> <a href="#">11-12.7</a></p>	

## A-G Approved Key Assignments

1.	<b>Electronic Portfolio-</b> 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. <i>Unit(s) 7</i>
2.	<b>Early Pioneers-</b> 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. <i>Unit(s) 7</i>
3.	<b>Small Flight Cage-</b> 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. <i>Unit(s) 7</i>
4.	<b>Simulator Flying-</b> 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: <a href="https://www.khanacademy.org/partner-content/mit-k12/mit-k12-science/mit-k12-physics/v/indoor-flying-robots">https://www.khanacademy.org/partner-content/mit-k12/mit-k12-science/mit-k12-physics/v/indoor-flying-robots</a> . Students may also use FAA Part 107 study materials to connect simulator practice to remote pilot knowledge areas. <i>Unit(s) 8</i>
5.	<b>Classroom UAS Flying-</b> 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. <i>Unit(s) 8</i>
6.	<b>Where Are the Drones? -</b> 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. <i>Unit(s) 8</i>
7.	<b>Civilian Careers-</b> 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. <i>Unit(s) 9</i>
8.	<b>Government Careers-</b> 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. <i>Unit(s) 9</i>
9.	<b>FAA Resource-</b> 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. <a href="https://www.faa.gov">https://www.faa.gov</a> <i>Unit(s) 10</i>
10.	<b>Large Flight Cage-</b> 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. <i>Unit(s) 10</i>
11.	<p><b>What to do About Risk- Using</b> 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.</p> <ul style="list-style-type: none"> <li>• Hazard Identification</li> <li>• Hazard Assessment</li> <li>• Analyze Risk Controls</li> <li>• Implement Mitigators</li> <li>• Supervise, Execute and Record</li> </ul> <p>Students will present their Deliberate Risk Analysis chart to the class and it will be included in their e-portfolio. <i>Unit(s) 11</i></p>
12.	<b>Learning from Errors-</b> 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. <i>Unit(s) 11</i>
13.	<b>Challenged Flying-</b> 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. <i>Unit(s) 11</i>
14.	<b>Impact of the UAS field on Society (Final)-</b> 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 11-12.1d

### *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

### ***Business and Finance***

#### ***A. Business Management Pathway***

- A1.1 *Recognize personal traits and leadership styles of entrepreneurs and business leaders.*
- A1.2 *Analyze management theories and their application within the business environment.*
- A1.3 *Develop personal management skills to function effectively, efficiently, and collaboratively in a business environment.*
- A1.4 *Determine the type of business organization most appropriate for various business profiles.*
- A1.5 *Construct and defend a business plan (components may include an executive summary, organizational structure, market analysis, Strengths Weaknesses Opportunities and Threats (SWOT) analysis, marketing plan, operating procedures, financial data, and feasibility and supporting documentation).*
- A2.0 *Plan, organize, secure, and manage resources of a project to achieve specific goals.*
- A2.1 *Determine Specific, Measurable, Achievable, Realistic and Time-bound (SMART) goals for a specific project.*
- A6.0 *Explain the importance of risk management and regulatory compliance in business.*
- A6.1 *Identify, assess, and prioritize risks.*
- A6.2 *Describe the concept and process of risk management, including the use of risk management tools such as insurance.*
- A7.3 *Examine technological trends and analyze the impact of technological innovations on the marketing and distribution of goods and services.*
- A8.0 *Construct a Marketing Plan.*
- A8.1 *Describe effective marketing techniques.*
- A8.2 *Explore how products and services are conceived, developed, maintained, and improved in response to market opportunities.*
- A8.3 *Conduct market analysis and assess the business organization's position within their industry.*
- A8.4 *Interpret how market research is used to develop strategies for marketing.*
- A8.5 *Differentiate the components of a promotional plan (e.g., advertising, public relations, and sales promotion) and describe how the plan is used to achieve a stated outcome.*

## 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.