

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

District Name:	Southwest Region School District (Bristol Bay Regional CTE Program Course)
Date:	October 21, 2020
Course Name:	Drone Essential Knowledge & Skills
Course Number:	
Middle School:	No
Foundational Course	No
Prerequisites <i>(If this course requires prerequisites, please name them)</i>	None
Number of HS Credits:	0.25
Sequence(s): <i>(These may be sequence or CTEPS titles - District must first have these entered into the Portal – titles must match)</i>	Transportation, Distribution & Logistics
Source(s) of Technical Standards: <i>(Selection must match the Portal selection)</i>	<ol style="list-style-type: none"> 1. Federal Aviation Administration (FAA) 2. Alaska Department of Education and Early Childhood Development
Names/Numbers of Technical Standards: <i>(Selection must match Portal selections)</i>	<ol style="list-style-type: none"> 1. FAA Remote Pilot - Small Unmanned Aircraft Systems (Certification and Recurrent Knowledge Testing) Airman Certification Standards: UA.I.A-D; UA.II.A-B; UA.III.A-B; UA.IV.A; & UA.V.A-F. 2. AK Dept. of Ed. & Early Childhood Development: Computer Digital Literacy Standards: 6-12.EL1-4; 6-12.DC.2; 6-12.KC.1,3,4; 6-12.ID.1,2,4; 6-12.CT.1-3; 6-12.CC.1-4; & 6-12.GC.1-4.

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Course Description:	Drone Essential Knowledge and Skills will focus on building a basic understanding of drones. Students will begin by building general awareness of drones and progress to flying safely as a part of a team, earning the FAA part 107 commercial license, and building skills towards starting a drone business. This course will address ways that drones can benefit local communities, build piloting skills that can translate into becoming a commercial operator, build awareness of ethical and legal flying considerations, and delve into subject matter aimed at preparing students for their FAA test. As a part of the course, students will initially fly drones in a VR format. Additionally, students will learn about the drone racing league and competitive drone racing opportunities.
Instructional Topic Headings:	DEKS - Essential Knowledge; FAA Part 107 Exam Preparation; Community Service; Safety; Home, School, Community Connections; Going from Hobbyist to Remote Airman; Learning to Fly for Mastery and Profit; Business Plans; & Starting Your Own Drone Business
Recognized Postsecondary Credential (RPC):	Federal Aviation Administration (FAA) Remote Pilot Certification
Employability Standards source: <i>(Name source of employability standards – must match Portal)</i>	Alaska Employability Standards https://education.alaska.gov/21cclc/pdf/alaskaemployabilitystandards.pdf
CTSO participation is included:	N/A
Current Dual Credit Agreement:	N/A
Date:	N/A
Postsecondary Institution Name:	N/A
Postsecondary Course Name:	N/A
Postsecondary Course Number:	N/A
Postsecondary Course Credit:	N/A

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Course developed by:	Bristol Bay Regional CTE Program
Course adapted from:	N/A
Course is brokered through another institution or agency:	N/A

Student Performance Standards (Instructional Topic Headings)	Specific Technical Skills Standards	Alaska English / Language Arts Standards	Alaska Math Standards	Alaska Science Standards	Alaska Cultural Standards	Employability Standards	Assessment
DEKS Essential Knowledge: 1. Identify the differences between drones, UAS, and UAV. 2. Describe the FAA and its regulations. 3. Differentiate between hobbyist and commercial drone pilot. 4. Understand the risks and advantages of flying drones. 5. Explain the physics of flight as it relates to drones; and the relationship between air (types), wind (speed), Bernouli's Principle, and safe drone flights. 6. Identify the top safety considerations for drone flying. 7. Reflect on your personal goals for learning about drones. 8. Analyze and provide examples of the positive and negative public impressions of drones.	6-12.EL.1 6-12.DC.2 UA.III.BK1a-c	RST.9-10.1,5 RST.9-12.4 WHST.9-12.4 SL.9-12.1	MP.4 N-Q.1.2	HS-PS2-1,2	B1-4 D6 E3,8	A2, 5,6 B1, 2	Student responses to DEKS questions Verbal assessments during small group discussion

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

FAA Part 107 Exam Preparation: 1. Identify basic information about the structure and requirements for the exam. 2. Identify applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation. 3. Explain airspace classification, operating requirements, and flight restrictions affecting small unmanned aircraft operation. 4. Describe aviation weather sources and effects of weather on small unmanned aircraft performance 5. Explain small unmanned aircraft loading considerations, including weight, stability, and load balance. 6. Identify emergency procedures relating to small unmanned aircrafts. 7. Define crew resource management. 8. Identify proper radio communication procedures. 9. Determine the performance of small unmanned aircraft and the effects of temperature and humidity on density. 10. Describe the physiological effects of drugs and alcohol that affect pilot performance. 11. Explain aeronautical decision-making and judgment processes, including risk management. 12. Describe basic airport operations. 13. Identify maintenance and preflight inspection procedures.	UA.I.A.K1-5	RST.9-10.1,5	MP.4,6	HS-PS2-1,2,4	B1-4 C3 D6	A.2,6 B2,4,5	Student responses to DEKS questions
	UA.I.B.K1-22	RST.9-12.2,-4,7	N-Q.1,2	HS-ESS2-5			Verbal assessments during small group discussion
	UA.I.C.K1-4	UA.I.D.K1	WHST.9-12.4	A-R.EI.10			
	UA.II.A.K1-4	UA.II.B.K1-5	SL.9-12.1	F-LE.5	HS-ESS3-1		FAA Practice Exam
	UA.III.A.K1-5	UA.III.B.K1-1k		G-C.O.1			FAA Part 107 Remote Pilot sUAS Exam
	UA.IV.A.K1-2			G-M.G.1,2			
	UA.V.A.K1-8						
	UA.V.B.K1-7						
	UA.V.C.K1-5						
	UA.V.D..K1-5						
	UA.V.E.K1-7						
	UA.V.F.K1-5						
	6-12.DC.2						

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

<p>Community Service:</p> <ol style="list-style-type: none"> 1. Explain the value of community service. 2. Identify groups in your community that could benefit from drone services and plan how to work with them. 3. Identify safety concerns affecting your community, and how service providers address these concerns. 4. Identify the source(s) for mapping and aerial information about your community and how this is gathered and distributed. 5. Identify potential uses for drones for the safety in your community, including: search and rescue operations, school safety, agricultural or utility mapping needs, special events, natural resource monitoring etc. 	<p>6-12.KC.3,4 6-12.ID.1,2 6-12.CT.2,3 6-12.GC.1,2,4</p>	<p>WHST .9-12.2,4,7 SL.9-12.1,4</p>	<p>MP.1,4,5</p>	<p>HS-ESS3-1,4 HS-ETS1-2,3</p>	<p>A1,7 B2-4 C2 D5 E2,4,6</p>	<p>A2,6 B1,2,5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion</p>
<p>Safety:</p> <ol style="list-style-type: none"> 1. Explain the culture and policy of safety to be used with drones. 2. Identify the acronyms PIC and VO and explain the importance of team flying. 3. Describe safe drone storage procedures. 4. Identify how drones can contribute to the safety of students and staff at school. 5. Identify how ethics ties to safety procedures. 6. Describe how successes and mistakes during practice flying sessions help improve safety. 	<p>6-12.DC.2</p>	<p>RST.9-12.3,4 WHST .9-12.4 SL.9-12.1</p>	<p>MP.4,6</p>	<p>HS-ETS1-2,3</p>	<p>B1-4 C4 D6 E3,7</p>	<p>A1,2,6 B1</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion</p>

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

<p>Home/School/Community Connection:</p> <ol style="list-style-type: none"> 1. Identify how drones can help facilitate economic commerce in your community. 2. Describe how to support safe and ethical use of drones in school and the community through policies and school/home communications. 3. Investigate and explain how a drone club could work at your school and how to involve families and community members in this effort. 	<p>6-12.DC.2 6-12.KC.3,4 6-12.ID.1,2 6-12.CT.2,3 6-12.CC.1 6-12.GC.2</p>	<p>WHST .9-12.4,7 SL.9-12.1,4</p>	<p>MP 1,4</p>	<p>HS-ETS 1-2,3</p>	<p>A1 B3,4 C2 D5 E1,4-7</p>	<p>A2,4,6 B-3,5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion</p>
<p>Going from Hobbyist to Remote Airman:</p> <ol style="list-style-type: none"> 1. Identify the FAA requirements after passing the Part 107 exam. 2. Differentiate between “hobbyist” and “remote airman.” 3. Solidify a plan for community service projects for practice and helping others. 4. Describe the ethical and safety considerations as a new commercial drone pilot. 5. Explain ways to help others learn about safe and productive uses of drones. 	<p>6-12.DC.2 6-12.KC.4 6-12.ID.1,2,4 6-12.CC.1 6-12.GC.2,4</p>	<p>RST.9-10.1 RST.9-12.2,4 WHST .9-12.2,4-7 SL.9-12.1,4,5</p>	<p>N/A</p>	<p>HS-ETS 1-2,3</p>	<p>A1 B1-4 C2,4 D5 E1,6,7</p>	<p>A1,2,6 B5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion Community Service Plan</p>
<p>Learning to Fly for Mastery and Profit:</p> <ol style="list-style-type: none"> 1. Create and execute a plan for setting up an internship as a drone pilot with a local or regional business. 2. Describe the benefits of becoming an intern pilot for both yourself and the business. 3. Plan the logistics for the internship, including drone equipment ownership, insurance, and time frame. 	<p>6-12.EL.1-4 6-12.KC.1,3,4 6-12.CT.1-3 6-12.GC.1-4</p>	<p>WHST .9-12.2,4-7 SL.9-12.1,4,5</p>	<p>MP. 1,4,6 N-Q .2</p>	<p>N/A</p>	<p>B1-4 C4 D6</p>	<p>A2,3,7 B1,2,4,5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion Internship Plan</p>

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

<p>Business Plans:</p> <ol style="list-style-type: none"> 1. Identify potential customers and services for a self-run business in your community. 2. Identify the competition for these services and how your services will be more desirable. 3. Investigate how to survey the business community and environment to build your business plan. 4. Research how much you would need to invest in: equipment, marketing, financials, repairs, and training. 5. Identify your annual gross and net income goals and amount to be invested back into the business per year. 6. Describe how you will measure customer satisfaction. 	<p>6-12.EL.1,3 6-12.EL.KC.1,3,4 6-12.ID.1,2,4 6-12.CT.1,2,3 6-12.CC.1-4 6-12.GC.1,2,4</p>	<p>WHST .9-12.2,4-7 SL.9-12.1,4,5</p>	<p>MP. 1,2,4,6 N-Q .1,2</p>	<p>HS-ETS 1-2,3</p>	<p>B1-4 C2,3 D5,6 E1-4,6</p>	<p>A2,4 B1-5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion Business Plan</p>
<p>Starting Your Drone Business:</p> <ol style="list-style-type: none"> 1. Determine a name for the business. 2. Explain how to set up a banking business account as well as a tax ID with the city, borough, or state government for the business. 3. Create a budget for the first six months and year. 	<p>6-12.ID.1 6-12.CT.1-3 6-12.CC.1</p>	<p>RST.9-12.3 WHST .9-12.2,4-6 SL.9-12.1,4,5</p>	<p>MP. 2,4-6</p>	<p>N/A</p>	<p>B1-4 C4 D6</p>	<p>A2,4 B1-5</p>	<p>Student responses to DEKS questions Verbal assessments during small group discussion Business Budget</p>

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

<p>List the major instructional resources used for this course: (websites, textbooks, essential equipment, reference materials, supplies)</p> <p>Materials and tools necessary to teach safety and proper use as well as administer performance exams.</p>	<p>Curriculum Resources:</p> <ol style="list-style-type: none"> 1. Standley, Mark (2019) <i>Drone Essential Knowledge and Skills: Book of Questions for Schools</i>. Self Published. 2. Standley, Mark (2019) <i>Unmanned Aerial Systems: Book of Questions for Schools</i>. Self Published. 3. U.S. Department of Transportation, Federal Aviation Administration (2016) <i>Remote Pilot Small Unmanned Aircraft Systems Study Guide</i>. Flights Standard Service. https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/remote_pilot_study_guide.pdf 4. Northrup, T. [Tony & Chelsea Northrup]. (2017, Feb. 3) <i>Free Drone Certification Study Guide: FAA Part 107 sUAS Test</i> [Video]. YouTube. https://www.youtube.com/watch?v=6_ucCKFJUCU <p>Other Resources:</p> <ul style="list-style-type: none"> - IACRA website: https://iacra.faa.gov/IACRA/HelpAndInfo.aspx?id=5 - FAA Airman Knowledge Testing Matrix, General Requirements: https://www.faa.gov/training_testing/testing/media/testing_matrix.pdf - FAA Practice Exam: https://faadim.psiexams.com/WebTest/Secure/login.aspx - FAA Remote Pilot - Small Unmanned Aircraft Systems (Certification and Recurrent Knowledge Testing) Airman Certification Standards: https://www.faa.gov/training_testing/testing/acs/media/uas_acs.pdf - Alaska Department of Education & Early Development Digital Literacy Standard https://education.alaska.gov/akstandards/digitallit/alaska%20digital%20literacy%20standards.pdf
---	---