Virginia CTE

Unmanned Aircraft Systems (2023)

Demonstrating Personal Qualities and Abilities	1	Demonstrate creativity and innovation. 1
	2	Demonstrate critical thinking and problem solving. 2
	3	Demonstrate initiative and self-direction. 3
	4	Demonstrate integrity. 4
	5	Demonstrate work ethic. 5
Demonstrating Interpersonal Skills	6	Demonstrate conflict-resolution skills. 6
	7	Demonstrate listening and speaking skills. 7
	8	Demonstrate respect for diversity. 8
	9	Demonstrate customer service skills. 9
	10	Collaborate with team members. 10
Demonstrating Professional Competencies	11	Demonstrate big-picture thinking. 11
	12	Demonstrate career- and life-management skills. 12
	13	Demonstrate continuous learning and adaptability. 13
	14	Manage time and resources. 14
	15	Demonstrate information-literacy skills. 15
	16	Demonstrate an understanding of information security. 16
	17	Maintain working knowledge of current information-technology (IT) systems. 17
	18	Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. 18
	19	Apply mathematical skills to job-specific tasks. 19

	20 Demonstrate professionalism. 20
	21 Demonstrate reading and writing skills. 21
	22 Demonstrate workplace safety. 22
Examining All Aspects of an Industry	23 Examine aspects of planning within an industry/organization. 23
	24 Examine aspects of management within an industry/organization. 24
	25 Examine aspects of financial responsibility within an industry/organization. 25
	26 Examine technical and production skills required of workers within an industry/organization. 26
	27 Examine principles of technology that underlie an industry/organization. 27
	28 Examine labor issues related to an industry/organization. 28
	29 Examine community issues related to an industry/organization. 29
	30 Examine health, safety, and environmental issues related to an industry/organization. 30
Addressing Elements of Student Life	31 Identify the purposes and goals of the student organization. 31
	32 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult. 32
	33 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects. 33
	34 Identify Internet safety issues and procedures for complying with acceptable use standards. 34
Exploring Work-Based Learning	35 Identify the types of work-based learning (WBL) opportunities. 35
	36 Reflect on lessons learned during the WBL experience. 36
	37 Explore career opportunities related to the WBL experience. 37
	38 Participate in a WBL experience, when appropriate. 38
Introducing Unmanned Aircraft Systems	39 Describe applications of unmanned aircraft systems (UAS). 39
	40 Define a UAS, according to the Federal Aviation Administration (FAA). 40
	41 Explain the design of UAS. 41

	42 Identify elements of UAS. 42
	43 Research careers related to UAS. 43
	44 Identify the training needed. 44
	45 Identify the constraints of UAS. 45
	46 Identify milestones in the history of UAS. 46
Exploring Flight	47 Describe the four forces of flight. 47
	48 Describe the relationship among the forces. 48
	49 Identify the three axes of flight. 49
Defining the National Airspace System	50 Describe the National Airspace System (NAS). 50
	51 Use Low Altitude Authorization and Notification Capability (LAANC) to identify controlled airspace. 51
	52 Describe waivers. 52
Exploring Regulations	53 Explain the role of the FAA. 53
	54 Explain the requirements and process for registering sUAS vehicles with the FAA. 54
	55 Identify penalties for failure to adhere to Part 107 regulations. 55
	56 Explain the legend of a sectional chart. 56
	57 Follow regulations for sUAS. 57
	58 Identify requirements for earning an FAA Part 107 sUAS pilot license. 58
	59 Distinguish between controlled and uncontrolled airspace. 59
	60 Identify the three classifications of UAS operations. 60
	61 Research flight regulations. 61
	62 Research regulations that apply to flying recreational and commercial UAS. 62
Understanding the Importance of Monitoring Weather	63 Check weather advisory information. 63
	64 Read weather reports, forecasts, and charts. 64
	65 Explain the weather's effect on performance. 65

Examining Loading and Performance Concerns

66 **Select a sUAS to meet objectives.** 66

67 **Define aircraft configuration.** 67

68 **Determine airworthiness.** 68

Performing Operations

69 **Assign sUAS personnel.** 69

70 **Rehearse flight operation.** 70

71 **Assemble the aircraft's supporting equipment.** 71

72 **Create a preflight checklist.** 72

73 **Troubleshoot electrical systems.** 73

74 **Troubleshoot mechanical systems.** 74

75 **Troubleshoot airframe.** 75

76 **Perform scheduled maintenance on a fuel system.** 76

77 **Troubleshoot propulsion/powerplant.** 77

78 **Troubleshoot software.** 78

79 **Update software.** 79

80 **Inspect the sUAS for maintenance issues.** 80

81 **Inspect the aircraft for airworthiness.** 81

82 **Integrate payloads.** 82

83 **Implement configuration changes to hardware and software.** 83

84 **Document configuration changes.** 84

85 **Keep maintenance logs.** 85

86 **Establish operation communications plan.** 86

87 **Conduct maintenance test flight.** 87

88 **Assess operational risk.** 88

89 **Determine fuel or battery requirements.** 89

90 **Address personnel needs in the field.** 90

	91 Secure mission supplies. 91
	92 Appraise UAS batteries. 92
	93 Plan to secure operations area. 93
	94 Perform mission planning to take in consideration for emergency procedures. 94
Flying the sUAS	**95** Define operation objective. 95
	96 Assess area of operations. 96
	97 Set up flight control area. 97
	98 Upload flight plan to aircraft. 98
	99 Conduct safety briefing. 99
	100 Conduct mission briefing. 100
	101 Check for foreign objects and debris (FOD). 101
	102 Verify use of personal protective equipment (PPE). 102
	103 Communicate with crew and Air Traffic Control (ATC). 103
	104 Secure launch and recovery area. 104
	105 Launch aircraft. 105
	106 Fly the UAS. 106
	107 Maintain visual contact with aircraft. 107
	108 Monitor site communications. 108
	109 Recover aircraft. 109
	110 Conduct a post-flight inspection. 110
	111 Conduct a post-flight debrief. 111
	112 Pack sUAS for transport. 112
Coordinating Flight Operations Logistics	**113** Develop a schedule for the day of the flight. 113
	114 Communicate flight schedule. 114
	115 Coordinate mission-dependent resources. 115

	116 Schedule mission personnel. 116
Maintaining Professional Knowledge	**117** Practice flying the sUAS. 117
	118 Train on a flight simulator. 118
Performing Administrative Tasks	**119** Create proposals and presentations. 119
	120 File flight reports. 120
	121 Explain the role and purpose of a flight log and an equipment log. 121
	122 Demonstrate the upkeep of a flight log and an equipment log. 122