Virginia CTE

Agricultural Fabrication and Emerging Technologies (8019 - 36 weeks)

Agricultural Fabrication and Emerging Technologies (8019 - 36 weeks) AFET

A Demonstrating Personal Qualities and Abilities AFET.1

1 Demonstrate creativity and innovation. AFET.1.1

2 Demonstrate critical thinking and problem solving. AFET.1.2

3 Demonstrate initiative and self-direction. AFET.1.3

4 Demonstrate integrity. AFET.1.4

5 Demonstrate work ethic. AFET.1.5

B Demonstrating Interpersonal Skills AFET.2

6 Demonstrate conflict-resolution skills. AFET.2.6

7 Demonstrate listening and speaking skills. AFET.2.7

8 Demonstrate respect for diversity. AFET.2.8

9 Demonstrate customer service skills. AFET.2.9

10 Collaborate with team members. AFET.2.10

C Demonstrating Professional Competencies AFET.3

11 Demonstrate big-picture thinking. AFET.3.11

12 Demonstrate career- and life-management skills. AFET.3.12

13 Demonstrate continuous learning and adaptability. AFET.3.13

14 Manage time and resources. AFET.3.14

15 Demonstrate information-literacy skills. AFET.3.15

16 Demonstrate an understanding of information security. AFET.3.16

17 Maintain working knowledge of current information-technology (IT) systems. AFET.3.17

18 Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. AFET.3.18

.9 Apply mathematical skills to job-specific tasks. AFET.3.19

.0 Demonstrate professionalism. AFET.3.20

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21 Demonstrate reading and writing skills. AFET.3.21

22 Demonstrate workplace safety. AFET.3.22

D Examining All Aspects of an Industry AFET.4

23 Examine aspects of planning within an industry/organization. AFET.4.23

24 Examine aspects of management within an industry/organization. AFET.4.24

25 Examine aspects of financial responsibility within an industry/organization. AFET.4.25

26 Examine technical and production skills required of workers within an industry/organization. AFET.4.26

27 Examine principles of technology that underlie an industry/organization. AFET.4.27

28 Examine labor issues related to an industry/organization. AFET.4.28

29 Examine community issues related to an industry/organization. AFET.4.29

30 Examine health, safety, and environmental issues related to an industry/organization. AFET.4.30

E Addressing Elements of Student Life AFET.5

31 Identify the purposes and goals of the student organization. AFET.5.31

32 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult. AFET.5.32

33 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects. AFET.5.33

34 Identify Internet safety issues and procedures for complying with acceptable use standards. AFET.5.34

F Exploring Work-Based Learning AFET.6

35 Identify the types of work-based learning (WBL) opportunities. AFET.6.35

36 Reflect on lessons learned during the WBL experience. AFET.6.36

37 Explore career opportunities related to the WBL experience. AFET.6.37

38 Participate in a WBL experience, when appropriate. AFET.6.38

39 Identify the role of supervised agricultural experiences (SAEs) in agricultural education. AFET.6.39

40 Participate in an SAE. AFET.6.40

G Exploring Leadership Opportunities through FFA AFET.7

41 Identify the benefits and responsibilities of FFA membership. AFET.7.41

42 Describe leadership characteristics and opportunities as they relate to agriculture and FFA. AFET.7.42

43 Apply for an FFA degree and/or an agricultural proficiency award. AFET.7.43

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H Orienting Students to Agricultural Machinery and Equipment Safety and Operation AFET.8

44 Identify safety procedures and equipment necessary in agricultural fabrication and emerging technologies. AFET.8.44

45 Apply laboratory safety instructions. AFET.8.45

46 Explain emergency first-aid procedures. AFET.8.46

47 Identify the classifications of fires and the methods used to extinguish them. AFET.8.47

48 Demonstrate lifting and carrying techniques. AFET.8.48

49 Report injuries. AFET.8.49

50 Pass all safety exams with 100 percent accuracy. AFET.8.50

I Demonstrating Skills in Electricity AFET.9

51 Describe scientific principles related to electricity. AFET.9.51

52 Identify basic electrical controls. AFET.9.52

53 Apply electrical terminology and measurement. AFET.9.53

54 Explain the electrical service system from generation to residential distribution. AFET.9.54

J Creating Metal Fabrication Plans AFET.10

55 Identify welding symbols and weld symbols, according to the American Welding Society (AWS). AFET.10.55

56 Interpret drawings. AFET.10.56

57 Calculate the costs for a welding project. AFET.10.57

58 Lay out a project. AFET.10.58

K Performing Shielded Metal Arc Welding (SMAW) Operations AFET.11

59 Discuss important safety considerations related to the welding environment prior to welding. AFET.11.59

60 Observe specific areas of danger, caution, and warning. AFET.11.60

61 Follow safe practices in SMAW operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.11.61

62 Identify types of electrodes. AFET.11.62

63 Prepare equipment and materials for SMAW operations, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.11.63

64 Demonstrate machine setup for SMAW operations, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.11.64

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65 Demonstrate SMAW operations, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.11.65

66 Test welds for quality and strength of joint as outlined by AWS standards. AFET.11.66

L Performing Oxy-fuel Welding and Cutting AFET.12

67 Follow safe practices in oxy-fuel gas welding and cutting, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.12.67

68 Set up gas welding and cutting equipment, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.12.68

69 Demonstrate oxy-fuel welding, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.12.69

70 Braze weld mild steel, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.12.70

71 Cut mild steel with an oxy-fuel cutting torch, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.12.71

M Performing Gas Metal Arc Welding (GMAW) Operations AFET.13

72 Follow safe practices in GMAW operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.13.72

73 Prepare equipment and materials for GMAW operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.13.73

74 Demonstrate GMAW operations, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.13.74

75 Describe procedures for welding aluminum, following all safety requirements, industry recommended practices, and instructor guidelines. AFET.13.75

76 Demonstrate the ability to weld aluminum, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.13.76

N Performing Gas Tungsten Arc Welding (GTAW) Operations AFET.14

77 Follow safe practices in GTAW operations adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.14.77

78 Describe GTAW operation procedures. AFET.14.78

79 Prepare equipment and materials for GTAW operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.14.79

80 Demonstrate the ability to perform GTAW operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.14.80

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Performing Plasma Arc Cutting Operations AFET.15

87 Describe safe practices in hot metalworking operations. AFET.15.87

88 Identify metals. AFET.15.88

89 Describe the procedures for shaping, hardening, and tempering common tools. AFET.15.89

90 Select soldering equipment and tools. AFET.15.90

91 Prepare metals for soft soldering. AFET.15.91

92 Demonstrate soldering skills, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.15.92

P Performing Cold Metalworking Operations AFET.16

93 Describe safe practices for metal striking and machine tools, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.16.93

94 Identify metalworking hand tools by type and use. AFET.16.94

95 Drill holes in metal, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.16.95

96 Determine tap drill sizes. AFET.16.96

97 Cut threads with tap and die, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.16.97

98 Use files and saws, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.16.98

Q Demonstrating Tool Reconditioning AFET.17

99 Identify safe practices for tool reconditioning. AFET.17.99

100 Sharpen common tools, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.17.100

101 Repair tools, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.17.101

R Understanding Precision Agricultural Management AFET.18

102 Describe technologies used in precision agricultural management. AFET.18.102

103 Define site-specific application technology and its benefits. AFET.18.103

104 Define remote sensing and its applications. AFET.18.104

105 Describe the various types of positioning equipment. AFET.18.105

106 Describe the importance of developing and using maps in agricultural management. AFET.18.106

107 Describe the procedure for operating a GNSS receiver. AFET.18.107

108 Demonstrate the ability to collect data and apply that data in developing a map. AFET.18.108

.09 Describe how GNSS data is used in agricultural management. AFET.18.109

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110 Describe the purpose and uses of variable-rate technology. AFET.18.110

111 Develop a precision-management plan. AFET.18.111

S Utilizing Laser Technologies in Agriculture AFET.19

112 Research the applications for laser technology in agriculture. AFET.19.112

113 Demonstrate the ability to use laser technology in agriculture, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.19.113

T Exploring the Use of Drones for Agriculture AFET.20

114 Explain uses of drones in agriculture. AFET.20.114

115 Research the types of drones used in agriculture. AFET.20.115

116 Identify safety precautions and standard operating procedures for flying drones. AFET.20.116

117 Describe the Federal Aviation Administration (FAA) Part 107 guidelines. AFET.20.117

118 Prepare a drone for flight. AFET.20.118

119 Fly a drone, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AFET.20.119