Virginia CTE

Agricultural Structural Systems (8017 - 36 weeks)

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A Demonstrating Personal Qualities and Abilities AS.1

1 Demonstrate creativity and innovation. AS.1.1

2 Demonstrate critical thinking and problem solving. AS.1.2

3 Demonstrate initiative and self-direction. AS.1.3

4 Demonstrate integrity. AS.1.4

5 Demonstrate work ethic. AS.1.5

B Demonstrating Interpersonal Skills AS.2

6 Demonstrate conflict-resolution skills. AS.2.6

7 Demonstrate listening and speaking skills. AS.2.7

8 Demonstrate respect for diversity. AS.2.8

9 Demonstrate customer service skills. AS.2.9

10 Collaborate with team members. AS.2.10

C Demonstrating Professional Competencies AS.3

11 Demonstrate big-picture thinking. AS.3.11

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

13 Demonstrate continuous learning and adaptability. AS.3.13

14 Manage time and resources. AS.3.14

15 Demonstrate information-literacy skills. AS.3.15

16 Demonstrate an understanding of information security. AS.3.16

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

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

19 Apply mathematical skills to job-specific tasks. AS.3.19

20 Demonstrate professionalism. AS.3.20

21 Demonstrate reading and writing skills. AS.3.21

22 Demonstrate workplace safety. AS.3.22

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D Examining All Aspects of an Industry AS.4

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

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

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

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

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

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

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

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

E Addressing Elements of Student Life AS.5

31 Identify the purposes and goals of the student organization. AS.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. AS.5.32

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

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

F Exploring Work-Based Learning AS.6

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

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

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

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

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

40 Participate in an SAE. AS.6.40

G Exploring Leadership Opportunities through FFA AS.7

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

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

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

'' Orienting Students to Agricultural Machinery and Equipment Safety and Operation AS.8

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44 Identify safety procedures and equipment necessary for agricultural structural systems. AS.8.44

45 Apply laboratory safety instructions. AS.8.45

46 Identify emergency first-aid procedures. AS.8.46

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

48 Demonstrate lifting and carrying techniques. AS.8.48

49 Report injuries. AS.8.49

50 Demonstrate safe use of tools, materials, and equipment for use in agricultural structural systems. AS.8.50

I Exploring Types of Agricultural Structures AS.9

51 Identify different types of agricultural structures. AS.9.51

52 Identify components of agricultural structures. AS.9.52

53 Determine the purposes of various types of agricultural structures and systems. AS.9.53

J Performing Plumbing Operations AS.10

54 Demonstrate safety practices for performing plumbing operations, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.10.54

55 Describe agricultural plumbing systems. AS.10.55

56 Identify pipe fittings by type. AS.10.56

57 Select pipe threading and cutting tools. AS.10.57

58 Select types of pipe, tubing, and fittings. AS.10.58

59 Calculate the length of pipe required to complete a job. AS.10.59

60 Calculate the bill of materials for a plumbing project. AS.10.60

61 Use various types of connection methods to join/connect plastic and/or copper pipe, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.10.61

62 Thread steel pipe, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.10.62

63 Connect flare and compression fittings. AS.10.63

64 Sweat solder copper fittings, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.10.64

K Performing Concrete and Masonry Operations AS.11

65 Follow safety practices for performing concrete and masonry operations. AS.11.65

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66 Identify the types and uses of concrete. AS.11.66

67 Identify the components for creating concrete. AS.11.67

68 Calculate the quantity and cost of concrete needed for a job. AS.11.68

69 Explain the procedure for ordering ready-mixed concrete. AS.11.69

70 Determine the water-cement ratio for a job. AS.11.70

71 Construct forms for concrete. AS.11.71

72 Perform a slump test. AS.11.72

73 Prepare concrete, using base materials, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.11.73

74 Pour concrete into forms, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.11.74

75 Finish concrete slabs, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.11.75

76 Mix masonry mortar, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.11.76

77 Lay concrete block and/or brick, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.11.77

78 Calculate the bill of materials for a masonry project. AS.11.78

L Demonstrating Land Measurement and Building-Site Evaluation AS.12

79 Determine building-site conditions and limitations. AS.12.79

80 Identify permitting procedures and requirements. AS.12.80

81 Explain how to use different types of leveling instruments. AS.12.81

82 Take rod readings. AS.12.82

83 Determine the difference in elevation between two or more points using a level/grade rod. AS.12.83

84 Measure distance with tape. AS.12.84

85 Determine percent of slope. AS.12.85

86 Select terracing and water diversion options for soil conservation. AS.12.86

87 Interpret various maps. AS.12.87

88 Determine land area. AS.12.88

89 Determine elevation differences, using a hand level. AS.12.89

90 Describe how to use survey and site drawings. AS.12.90

91 Lay out foundations, footings, and batter boards. AS.12.91

M Performing Carpentry Skills AS.13

92 Follow safety practices for carpentry. AS.13.92

93 Interpret plans and drawings. AS.13.93

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94 Calculate a bill of materials for a carpentry project. AS.13.94

95 Select wood framing and roofing materials. AS.13.95

96 Select insulating materials. AS.13.96

97 Use carpentry tools and measuring instruments, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.13.97

98 Use construction fasteners (e.g., glue, nails, bolts, screws, anchors, studs, washers, nuts, staples, brads, pins, t-nails), adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.13.98

99 Lay out the framing of a building, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.13.99

100 Lay out rafters and braces, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.13.100

N Demonstrating Skills in Electricity AS.14

101 Explain safe working practices around electrical hazards. AS.14.101

102 Describe electrical energy and how it works. AS.14.102

103 Define common electrical terms and their relationships. AS.14.103

104 Determine the use and cost of electrical energy. AS.14.104

105 Interpret wiring plans. AS.14.105

106 Determine electrical power requirements. AS.14.106

107 Mark routes for small appliances, general purpose, and individual circuits. AS.14.107

108 Estimate wiring costs. AS.14.108

109 Install device boxes and outlet boxes, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.109

110 Install branch circuits, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.110

111 Explain the purpose of grounding electrical systems and equipment. AS.14.111

112 Ground electrical systems and equipment, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.112

113 Describe the type of service entrance equipment to install. AS.14.113

114 Install service entrance equipment, using cable or conduit with overhead or underground connectors, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.114

115 Describe GFCIs. AS.14.115

116 Troubleshoot electrical circuits, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.116

117 Install conduit, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.117

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.18 Interpret the NEC requirements for wiring. AS.14.118

119 Measure electrical circuits for voltage, current flow, resistance, and wattage, adhering to all safety requirements, industry recommended practices, and instructor guidelines. AS.14.119

120 Determine the size of an external, independently powered generator needed to operate a home. AS.14.120

121 Describe the materials necessary to install a home generator in accordance with NEC requirements. AS.14.121