

# 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
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### **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
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### **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

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**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

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**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

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**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

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## **H Orienting Students to Agricultural Machinery and Equipment Safety and Operation** AS.8

- 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

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## **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

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## **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

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**K Performing Concrete and Masonry Operations** AS.11

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

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**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

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**M Performing Carpentry Skills** AS.13

- 92 Follow safety practices for carpentry. AS.13.92
- 93 Interpret plans and drawings. AS.13.93
- 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

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## **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
- 118 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