

# 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

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**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

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**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
- 19 Apply mathematical skills to job-specific tasks. AFET.3.19
- 20 Demonstrate professionalism. AFET.3.20
- 21 Demonstrate reading and writing skills. AFET.3.21
- 22 Demonstrate workplace safety. AFET.3.22

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**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

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**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

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**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

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**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

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**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

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## **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

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## **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
- 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

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## **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

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## **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

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## **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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## **O 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

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**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

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**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

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**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
- 109 Describe how GNSS data is used in agricultural management. AFET.18.109
- 110 Describe the purpose and uses of variable-rate technology. AFET.18.110
- 111 Develop a precision-management plan. AFET.18.111

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**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

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**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