

## Agricultural Mechanics II Pacing Guide

<p><b>Unit 1:</b> FFA Basics</p>	<p><b>AFNR-AMTI-2</b> Orient and apply the comprehensive program of agricultural education, learn to work safely in the agriculture lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a Supervised Agricultural Experience Program (SAEP).</p> <p><b>2.1</b> Explain the role of the Agriculture Education program and the FFA in personal development. <b>2.2</b> Demonstrate knowledge learned through a SAEP. <b>2.3</b> Designs, implements, and documents SAE by recording steps, skills acquired, and financial information. <b>2.4</b> Develop leadership and personal development skills through participation in the FFA. <b>2.5</b> Explore the history and background of the FFA</p>	<p>1 Week</p>
<p><b>Unit 2:</b> Safety</p>	<p><b>AFNR-AMTI-4</b> Recognize potential hazards in agricultural mechanics, identify how to create a safe work environment, and demonstrate proper safety practices.</p> <p><b>4.1</b> Identify and eliminate potential hazards in the agricultural mechanics laboratory and/or work setting. <b>4.2</b> Discuss the importance of safety in agricultural occupations. <b>4.3</b> Describe features of a safe work environment in various agricultural mechanical locations. <b>4.4</b> Select safety equipment and procedures for various agriculture related activities. <b>4.5</b> Demonstrate safety procedures and appropriate behavior while working in the agriculture classroom, labs, and/or work sites. <b>4.6</b> Distinguish the areas identified by various safety colors and the importance of the coding. <b>4.7</b> Describe the meaning of each safety color. <b>4.8</b> Identify and describe personal protective equipment required for various activities conducted in the agricultural mechanics laboratory and industry. <b>4.9</b> Recognize potential hazards related to working with electricity, electric arc welders, hand tools, portable and stationary power equipment, power machinery, fasteners and fuels, lubricants, solvents, paints and other chemicals used in agricultural mechanics. <b>4.10</b> Safely operate all hand tools, power tools, and equipment in the agricultural mechanics laboratory.</p>	<p>1 Week</p>

<p><b>Unit 3:</b> Oxygen/Acetylene Torch and Plasma Cutting</p>	<p><b>AFNR-AMTI-10</b> Demonstrate and describe the proper set-up and use of the oxy-fuel welding and cutting outfit for cutting steel and welding various material thicknesses and joint types.</p> <p><b>10.1</b> Describe the parts of an oxy-fuel welding and cutting outfit including parts of the regulator, torch body, hose fittings, welding tips and cutting attachments. <b>10.2</b> Describe the role of oxygen in the welding and cutting process. <b>10.3</b> Describe the role of fuels in the welding and cutting process. <b>10.4</b> Compare and contrast different fuels used with oxygen in oxy/fuel welding and cutting. <b>10.5</b> Demonstrate and explain the safe set-up and shut down procedures for using the oxy/acetylene welding and cutting outfit. <b>10.6</b> Perform welding and cutting operations to industry standards.</p>	<p>3 Weeks</p>
<p><b>Unit 4:</b> Welding</p>	<p><b>AFNR-AMTI-9</b> Define shielded metal arc welding, describe types of welded joints and weld positions, compare and contrast metals for use in the construction of agricultural structures and equipment, explain the appropriateness of electrodes for various metals and weld applications, demonstrate the ability to select the proper welding amperage for various metal thicknesses and joint types and demonstrate skills necessary to prepare metals and weld joints with the shielded arc welding process.</p> <p><b>9.1</b> Define terms associated with shielded metal arc welding. <b>9.2</b> Describe the parts of an arc welder. <b>9.3</b> Compare alternating current, direct current and transformer rectifier welders and list advantages and disadvantages for each. <b>9.4</b> Compare the direct current electrode negative and direct current electrode positive weld processes and explain the application of each. <b>9.5</b> Select electrodes based upon type of metal to be welded, material thickness, and weld position. <b>9.6</b> Select amperage and adjust welders for optimum weld performance. <b>9.7</b> Demonstrate proper welding techniques for various welded joints and weld positions. <b>9.8</b> Identify metal fabrication equipment and demonstrate the ability to set-up, adjust and use metal fabrication equipment to cut, shear, punch, break and bend metal. <b>9.9</b> Identify metals and alloys used in metal fabrication based on their metallurgical properties.</p>	<p>5 Weeks</p>

<p><b>Unit 5:</b> Differential Leveling</p>	<p><b>AFNR-AMTII-9</b> Using learned techniques, design, layout, and construct an agricultural structure.</p> <p><b>9.1</b> Interpret and analyze property maps to determine boundary lines.  <b>9.2</b> Analyze the impact of topography, climate, and utilities upon building construction.  <b>9.3</b> Analyze the environmental effects of the buildings being constructed.  <b>9.4</b> Interpret local codes and regulations for building construction.  <b>9.5</b> Interpret a blueprint and specifications of a building.  <b>9.6</b> Apply basic math skills to estimate construction materials.  <b>9.8</b> Prepare a material list for estimating construction materials.  <b>9.9</b> Measure construction materials using measuring tools or instruments.  <b>9.12</b> Design a building for the weather conditions of the local area.  <b>9.13</b> Set up and manipulate a builder's level and engineer's rod.  <b>9.14</b> Record accurate notes of elevation readings taken.  <b>9.15</b> Demonstrate the procedure for laying out an agricultural structure including footings, walls, rafters, and roofing systems.</p>	<p>3 Weeks</p>
<p><b>Unit 6:</b> Small Engine/ Diesel Engine</p>	<p><b>AFNR-AMTI-11</b> Describe the operating principles of a four stroke engine, identify and describe the function of the major components of small, four stroke/cycle engines and identify and explain proper maintenance procedures for four stroke cycle engines in accordance with the manufacturer's recommendations.</p> <p><b>11.1</b> Identify and compile a list of common small engine components.  <b>11.2</b> Explain how a small engine operates and compare the similarities and differences between four stroke-cycle engines and two stroke-cycle engines.  <b>11.3</b> Interpret service and parts manuals for small engines and identify operating instructions and safety procedures for operating small engines.  <b>11.4</b> Identify tools commonly used for small engine service and repair.  <b>11.5</b> Describe the importance of regularly servicing small engines.  <b>11.6</b> Create and display a maintenance calendar utilizing small engine owner's manuals.  <b>11.7</b> Perform basic service procedures according to manufacturer's recommendations.  <b>11.8</b> Compare proper maintenance procedures using service manuals from a variety of small engine manufacturers.</p>	<p>5 Weeks</p>