AGRICULTURAL MECHANICS AND TECHNOLOGY

UNIT A: MECHANICAL SYSTEMS AND TECHNOLOGY

1. Introduction to Agricultural Mechanics and Technology Systems

Lesson 1—Identifying Basic Areas of Agricultural Mechanization

Lesson 2—Identifying Hazards in Agricultural Mechanics

Lesson 3—Using Personal Safety in Agricultural Mechanics

Lesson 4—Recognizing the Impact of Technological Advances In Agricultural Mechanics

Lesson 5—Describing Basic Physical Science Laws Applied in Agricultural Mechanics

Lesson 6—Understanding Construction Codes

Lesson 7—Exploring Careers in Agricultural Mechanics and Technology Systems

2. Soil and Environmental Technology Systems

Lesson 1—Understanding Land Measurement and Legal Descriptions

Lesson 2—Using Surveying Equipment

Lesson 3—Applying Profile Leveling Techniques

Lesson 4—Applying Differential Leveling Techniques

Lesson 5—Understanding the Importance of Managing Soil, Water, and Waste

Lesson 6—Understanding Soil Drainage Systems

3. Construction Systems

Lesson 1—Planning and Designing Projects

Lesson 2—Using Hand Tools

Lesson 3—Using Power Tools

Lesson 4—Caring for and Reconditioning Construction Tools

Lesson 5—Planning and Placing Concrete

Lesson 6—Planning, Laying Out, and Tooling Concrete Block

Lesson 7—Using Construction Fasteners and Hardware

Lesson 8—Selecting Lumber

Lesson 9—Framing Agricultural Structures

Lesson 10—Roofing Agricultural Structures

Lesson 11—Siding Agricultural Structures

Lesson 12—Insulating Agricultural Structures

Lesson 13—Preparing Surfaces and Selecting Paints/Preservatives

Lesson 14—Selecting Applicators and Applying Finishes

Lesson 15—Understanding and Designing Plumbing Systems

Lesson 16—Working with Galvanized Pipe

Lesson 17—Working with Copper Tubing

Lesson 18—Working with Plastic Pipe

Lesson 19—Maintaining and Repairing Plumbing Systems

4. Electrical Systems

Lesson 1—Introducing Electricity and Electrical Safety

Lesson 2—Exploring the Science of Electricity

Lesson 3—Measuring and Calculating Electricity

Lesson 4—Identifying Electrical Tools and Equipment

Lesson 5—Comparing Single-Phase and Three-Phase Systems

Lesson 6—Preparing and Using Schematics

Lesson 7—Wiring Circuits

Lesson 8—Selecting and Maintaining Electric Motors and Controls

5. Metal Fabrication

Lesson 1—Identifying Metals and Their Physical Properties

Lesson 2—Applying Heat Treating Processes

Lesson 3—Applying Cold Metalworking Techniques

Lesson 4—Applying Fuel Gas Welding (FGW) Processes and Techniques

Lesson 5—Using Metal Cutting Processes and Techniques

Lesson 6—Applying Shielded Metal Arc Welding (SMAW) Techniques

Lesson 7—Applying Metal Inert Gas (MIG) Welding Techniques

Lesson 8—Applying Tungsten Inert Gas (TIG) Welding Techniques

6. Agricultural Power Systems

Lesson 1—Understanding Principles of Operation of Internal Combustion Engines

Lesson 2—Identifying Engine Systems and Their Components

Lesson 3—Measuring Engine Components and Specifications

Lesson 4—Applying Preventive Maintenance Practices

Lesson 5—Using Small Engines

Lesson 6—Using Multiple Cylinder Engines

Lesson 7—Using Hydraulic Systems

Lesson 8—Using Pneumatic Systems

Lesson 9—Using Robotics Systems

7. Agricultural Equipment Systems

Lesson 1—Understanding Applications of Fluids and Lubricants in Agricultural Equipment

Lesson 2—Operating, Calibrating, and Maintaining Agricultural Tillage Systems and Equipment

Lesson 3—Operating, Calibrating, and Maintaining Agricultural Planting Systems

Lesson 4—Operating, Calibrating, and Maintaining Irrigation Systems

Lesson 5—Operating, Calibrating, and Maintaining Spraying Systems

Lesson 6—Operating, Calibrating, and Maintaining Forage Harvesting and Handling Systems

Lesson 7—Operating, Calibrating, and Maintaining Grain Harvesting and Handling Systems

Lesson 8—Operating, Calibrating, and Maintaining Feed Handling Systems

Lesson 9—Operating, Calibrating, and Maintaining Animal Waste Management Systems

8. Technology Systems

Lesson 1—Determining the Use of Technology in World Food and Fiber Production

Lesson 2—Determining the Role of Electronics In Agricultural Technology

Lesson 3—Understanding Monitoring Systems

Lesson 4—Determining the Role of Precision Technologies

Lesson 5—Understanding Global Positioning Systems (GPS)

Lesson 6—Understanding Geographic Information Systems (GIS)

Lesson 7—Understanding Remote Sensing Technology

UNIT B: EMPLOYABILITY IN AGRICULTURAL/ HORTICULTURAL INDUSTRY

1. Developing Personal Skills

Lesson 1—Self-Understanding and Assessment

Lesson 2—Developing Human Relations Skills in the Workplace

2. Developing Communication Skills

Lesson 1—Introduction to Communication

Lesson 2—Understanding Effective Communication Techniques

Lesson 3—Developing Listening Techniques

Lesson 4—Identifying Effective Speaking Techniques

Lesson 5—Organizing and Presenting a Persuasive Message

Lesson 6—Using Communication Skills In Appropriate Situations

3. Gaining Employment

Lesson 1—Developing Goals

Lesson 2—Obtaining Education for a Job

Lesson 3—Identifying Occupational Competencies

Lesson 4—Finding a Job

Lesson 5—Applying for a Job

Lesson 6—Writing a Résumé and Letter of Application

Lesson 7—Succeeding In a Job Interview

Lesson 8—Understanding Conflicts and Their Resolution

UNIT C: DEVELOPING LEADERSHIP SKILLS IN AGRICULTURE

1. Understanding the History and Organization of FFA

Lesson 1—Exploring the History and Organization of FFA

2. Recognizing Opportunities in FFA

Lesson 1—Discovering Opportunities in the FFA

Lesson 2—Determining FFA Degrees, Awards, and CDEs

3. Developing Leadership Skills

Lesson 1—Understanding FFA Officer Duties and Responsibilities

Lesson 2—Planning and Organizing an FFA Meeting

4. Participating in Community and Government Organizations

Lesson 1—Understanding Youth Clubs and Organizations

Lesson 2—Developing an Awareness for Your Community

UNIT D: SUPERVISED EXPERIENCE IN AGRICULTURE/ HORTICULTURE

1. Determining Purposes and Procedures of SAE

Lesson 1—Determining the Benefits of an SAE

Lesson 2—Determining the Kinds of SAE

2. Planning and Developing SAE Programs

Lesson 1—Researching Possible SAE Programs

Lesson 2—Planning Your SAE Program

Lesson 3—Implementing SAE Programs

3. Expanding My SAE

Lesson 1—Keeping and Using SAE Records

Lesson 2—Making Long Range Plans for Expanding SAE Programs