

Agricultural Mechanics and Metal Technology

Grade Level:

10th, 11th and 12th

Course Duration:

One Year

Teacher:

Lee Blanton

Room Number:

614 A

Contact Information:

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Office Hours:

Conference Time: Monday to Friday from 10:50 - 12:30

Best Way to Contact Me: Email, School Phone, or Parent Square. I'll respond within 24 hours on school days.

Course Overview

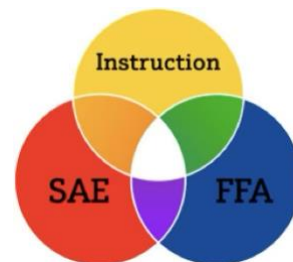
This course is designed to provide students with hands-on experience and technical knowledge in agricultural mechanics and metal technologies. Students will learn about shop safety, tool usage, electrical systems, plumbing, welding, and advanced agricultural mechanics. The course will also integrate the Three-Part Agricultural Education Model.

Supervised Agricultural Experiences (SAE)

All students will be required to maintain an SAE project and document their progress using the Agricultural Experience Tracker (AET).

Three-Part Agricultural Education Model

1. Classroom Instruction: Students will receive hands-on and theoretical instruction in agricultural mechanics and metal technologies.
2. FFA Participation: Students are encouraged to join and participate in the National FFA Organization and participate in leadership development events, career development events, and community service activities
3. Supervised Agricultural Experience (SAE): Each student will develop and maintain an SAE project, which will be documented using the AET platform. SAE projects can include entrepreneurship, placement, research, or exploratory experiences related to agricultural mechanics or other agricultural fields.



Course Objectives and Goals

- Primary Learning Objectives for the Course
- Develop knowledge and skills in agricultural mechanics and metal technologies, including safety, tool usage, and operation of equipment.
- Understand mechanical systems and processes for agricultural applications.
- Learn proper welding techniques, including MIG, TIG, and arc welding.
- Construct and repair agricultural structures and equipment using industry-standard practices.
- Explore career opportunities in agricultural mechanics and related industries.
- Participate in FFA activities to develop leadership, teamwork, and communication skills.
- Complete and maintain an SAE project using the AET platform.

Skills and Knowledge Students Should Gain by the End of the Course

- Demonstrate proficiency in the safe use and maintenance of tools, machinery, and welding equipment.
- Apply problem-solving and critical-thinking skills to real-world agricultural mechanics scenarios.
- Understand and apply basic principles of electricity, plumbing, and hydraulics in agricultural systems.
- Fabricate, repair, and modify metal and non-metal components used in agricultural systems.
- Utilize blueprint reading and technical drawings to construct projects accurately.
- Develop employability skills, including resume building, interview preparation, and workplace professionalism.

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7. Complete and maintain an SAE project using the AET platform.

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Course Units and Weekly Breakdown

1. Week 1-3: Introduction to the Course, FFA/SAE, and Employability Skills
 - a. Overview of agricultural mechanics and metal technologies.
 - b. Introduction to the Three-Part Model: Classroom, FFA, and SAE.
 - c. Setting up SAE projects and logging progress in AET.
 - d. Employability skills: resume writing, interview preparation, and workplace professionalism.
2. Week 4-9: Shop Safety, Tool Identification, and Basic Measurement Skills
 - a. Shop safety protocols and personal protective equipment (PPE).
 - b. Identification, use, and maintenance of hand tools and power tools.
 - c. Basic measurement skills, including tape measures, calipers, and micrometers.
 - d. Introduction to blueprint reading and technical drawings.

3. Week 10-15: Electrical Systems and Wiring
 - a. Fundamentals of electricity and electrical safety.
 - b. Wiring techniques for agricultural applications.
 - c. Troubleshooting and repairing electrical systems.
 - d. Hands-on practice with wiring circuits and components.
4. Week 16-21: Plumbing Systems
 - a. Principles of plumbing systems in agricultural settings.
 - b. Pipe fitting, cutting, and joining techniques.
 - c. Installation and repair of plumbing systems.
 - d. Introduction to hydraulics and their applications in agriculture.
5. Week 22-28: Metalworking and Welding
 - a. Introduction to welding safety and equipment.
 - b. Shielded Metal Arc Welding (SMAW).
 - c. Gas Metal Arc Welding (GMAW/MIG).
 - d. Oxy-acetylene cutting and welding.
 - e. Fabrication of metal projects using welding techniques.
6. Week 29-36: Capstone Projects, Career Pathways, and Advanced Agricultural Mechanics
 - a. Students will design and complete a capstone project that integrates skills learned throughout the course.
 - b. Exploration of career pathways in agricultural mechanics and related industries.
 - c. Advanced agricultural mechanics topics based on student interest and industry trends.
 - d. Final SAE project documentation and presentations.

Supervised Agricultural Experience (SAE)

Each student is required to develop and maintain an SAE project throughout the course. SAE projects allow students to apply the skills they learn in class to real-world agricultural experiences. Students will document their SAE progress using the Agricultural Experience Tracker (AET), every Friday.

Examples of SAE projects include:

- Welding and fabricating custom equipment or structures.
- Repairing and maintaining agricultural machinery.
- Assisting with electrical or plumbing projects on a farm or ranch.
- Researching and developing innovative solutions for agricultural mechanics challenges.

SAE Expectations:

1. Students must log hours, activities, and reflections in AET weekly Friday.
2. SAE projects will be evaluated based on effort, documentation, and alignment with course objectives.
3. Students will present their SAE projects at the end of the year as part of their final grade.

Types of Assignments

1. Hands-On Projects:
 - a. Building and fabricating metal structures.
 - b. Repairing agricultural equipment and systems.
 - c. Designing and constructing custom projects based on blueprints.
2. Written Assignments:
 - a. Research essays on agricultural mechanics topics.
 - b. Technical reports on completed projects.
 - c. Reflections and evaluations of individual and group work.
3. Quizzes and Tests:
 - a. Weekly quizzes on safety protocols, tool identification, and technical concepts.
 - b. Unit tests covering welding techniques, mechanical systems, and project planning.
4. SAE Documentation:
 - a. Weekly AET entries documenting SAE progress.
 - b. Mid-year and end-of-year SAE evaluations.
5. Capstone Project:
 - a. Students will design and complete a capstone project that integrates skills learned throughout the course.
 - b. Projects will be presented to the class and evaluated based on craftsmanship, creativity, and alignment with course objectives.

Assessment Methods

1. Major Grades (40 %)
 - Exams and Quizzes
 - Projects and Fabrication Work
 - SAE Presentation
2. Minor Grades
 - SAE Documentation
 - Graded based on completeness, organization, and quality of AET entries.
 - Class Participation and Professionalism
 - Active engagement in class discussions and activities.
 - Adherence to safety protocols and proper use of equipment.
 - Teamwork, leadership, and communication during group tasks.

Additional Information:

FFA Participation

- Students are encouraged to join the National FFA Organization to enhance their leadership, teamwork, and communication skills. FFA activities include leadership development events (LDEs), career development events (CDEs), and community service projects.

Important Dates

- SAE Project Proposal Due: September 1st
- Semester Exam SAE Evaluation: December 1st

- Final Exam SAE Presentation: May 1st
- Capstone Project Completion: May 1st

This syllabus reflects the integration of the Three-Part Agricultural Education Model and emphasizes the importance of hands-on learning, FFA participation, and SAE projects. Let me know if you need additional changes!

Personal Protective Equipment (PPE)

- **Failure to dress out for Shop days will result in loss of Participation points**
- **PPE Includes: (please let me know ASAP if you are unable to provide**
 - Safety Glasses (1 pair provided by school)
 - Welding hood (Welding hoods available to use if you do not want to purchase your own)
 - Closed Toe Leather Shoes
 - Welding Gloves
 - Hearing Protection
 - Long pants (Cotton)
 - Long Sleeve Shirt (Does not have to be FR, but must be Cotton)
 - Examples: Wrangler work shirts, Dickies, Ariat, Cowboy Gear