# Introduction

The project consists of three units: Surveying, Electrical, and Machinery. The curriculum was developed to not only cover content, but also to demonstrate different approaches. You will find variations in materials that reflect different styles. This is intentional to provide a variety of examples. In addition, each of the content areas are different and require different skills and approaches.

Each unit has a Unit Plan. The unit plan provides a road map to the unit and contains Student Learning Outcomes (SLOs), Tools and Equipment, Teaching Methods, and the list of lessons. Units are cross referenced to the Oregon ANFR Standards, Oregon Ag Mechanics CDE, and the National FFA CDE Skills.

## Slice and Dice

Teachers are encouraged to select lessons as appropriate to their courses. Not all lessons need to be used. Materials are provided in editable formats so teachers can alter them to adapt to available time. In PowerPoint this may mean hiding some slides. Activities can be edited to reference specific locations and equipment found at the school. Assessments can be tailored to the teacher’s individual needs.

## Instructional Hours

Each lesson has an estimated hours of instruction. However, this will vary widely with the course meeting time (e.g., daily vs. block), instructor’s style, and instructor’s knowledge. Use these as guide not as a mandate.

# Teaching Philosophy

Agricultural mechanics is a hands-on subject. While PowerPoints and videos are fine, we feel that they are no substitute for live interactive demonstrations to students. Teachers are encouraged use actual items for identification and to demonstrate techniques using the equipment in their shops. Live demonstrations encourage student interaction and allow the teacher to better check for understanding.

# Teacher Preparation

For teachers unfamiliar with the subjects, we encourage first a review of the materials. View the PowerPoints and Videos. Many PowerPoint slides have notes for the teacher. Notes can be printed in PowerPoint; see Notes Pages under print options. Do the exercises. Textbooks commonly used for secondary instruction are referenced. Review the relevant chapters. Generally, desk copies of text books can be obtained by teachers if a text is not available at their school. Finally, each unit has additional resources just for teacher preparation. Links are provided for additional resources (e.g. videos) and in the in the Resources folder.

Practice the lesson. For example, if the lesson is setup of a level then practice with your level to gain proficiency and self-efficacy. Seek out other agricultural mechanics teachers or local industry representatives. For example, the local tractor dealer can help you with the function of a machine and can likely provide reference materials such as a manual.

If a teacher is adding these units to their curriculum, we recommend selecting a few lessons to start. Ease into the topics. Long term the teacher can build on the initial lessons if they want to expand the curriculum.

Teaching outlines can be extracted easily from the PowerPoint slides. In PowerPoint see the print options to print the outline, notes pages, or handouts (three per page allows for notes).

# File Organization

Materials for each unit are organized into the following folders.

|  |  |
| --- | --- |
| **Folder** | **Contents** |
| Activities | Activities for students. In .docx format. |
| Assessments | Quizzes and Tests. In .docx format. |
| Guided Notes | Worksheets for students to take notes. These follow the PowerPoint Slides. In .docx format. |
| PPT | PowerPoint slides in .pptx format. |
| Videos | Video clips in .mp4 format. Note these are large files. You are free to post to YouTube or other platform for your students. |
| Resources | Additional teacher resources. (Various formats.) |

A complete list of materials is found in the Unit Plan.

## Lesson Outlines

Detailed outlines can be found in the PowerPoint slide decks. To print choose File | Print then select Outline. Many slides also contain notes for the teacher. These can be viewed with the slide or printed as notes pages.

# Tooling, Supplies, and Equipment.

Agricultural Mechanics instruction requires tools and equipment. Each unit plan describes a “minimum” tool requirement. This list does not speak to the quantity required. The quantity needed will depend on class size, facilities, how the teacher organizes instruction and to some extent budget. These requirements vary widely by content area. For example, electrical is primarily small hand tools and machinery requires large equipment and large tools. Electrical requires consumables like wire where surveying does not. Teachers are encouraged to plan for these needs as they integrate the units into their courses. Available tooling and facilities are a consideration when determining what curriculum to teach. Tools and Equipment may also dictate pedagogy and teaching strategies. For example, it is unlikely that you would have a tractor or survey instrument for every student so you might have students work in small groups rotating tasks. For electricity each student can have a wiring board and do individual work.

# Training CDE Teams

All of these lessons and activities can be used to train teams. Activities can be modified with variations for drill. For example

* In surveying you might have several courses for differential leveling.
  + Practice setup of various types of levels (borrow some from a local business)
  + Practice reading different types of rods (builder’s and Philadelphia videos are included)
  + Create a variety of “book” problems and have the team complete
* In electrical add some additional wiring problems.
  + Practice with single conductor (conduit) and NM cable wiring.
  + Changing the source location can create a new problem.
* For machinery focus on specific machines.
  + In general practice manual interpretation with different machines.
  + Some aspects of machinery such as hydraulics are common to many machines.
  + Review DC wiring (see Electrical)
  + Review Parts ID for various pieces of equipment
  + Review specific procedures for setup and calibration (see manual)