

Elementary Land Surveying

Unit Outline

1. Project Team Members: Ronald Weaner, Holly Weaner
2. Title of Course: Agriculture Mechanics II - Grade 10, 11, 12
3. Title of Unit or Project: Elementary Land Surveying
4. Approximate length of Unit or Project: 3 weeks
5. Brief description of the Unit or Project with an expected final outcome.

Students will learn the information and skills to perform basic leveling and transit operation. They will work in groups with the equipment and individually with the record keeping and map work.

6. Major Goals of Unit:

Students will be able to:

1. Properly and safely set up and operate the transit level.
2. Use the data generated from survey exercises to lay out building projects and measure land.
3. Complete maps and worksheets using survey data.

7. Sequence of balanced and integrated activities for students:

Students will complete the following activities:

1. Measure distances using pacing, measuring tapes, and estimating.
2. Work in groups setting up equipment and performing leveling and surveying operations.
3. Complete worksheets on taking field notes.
4. Complete maps and diagrams using collected survey data.
5. Stake out building foundations and property boundaries while working as a survey team member.

8. Checklist or rubric of assessment components for students:

Checklist of demonstrated skills: (check when completed)

- ___1. Student has calculated his pace distance.
- ___2. Student can estimate field distances using pacing and taping.
- ___3. Student can demonstrate the proper method of setting up a transit.
- ___4. Student can demonstrate the proper method of reading a survey rod.
- ___5. Student can properly complete the field notes using collected survey data.
- ___6. Student can properly complete a topographic map given the elevation of selected points on the map.
- ___7. Student can properly stake out a building perimeter using a transit and tape.
- ___8. Student can properly stake out a footer given building specifications.

9. Specific Standards addressed in this Unit or Project:

<u>Ref. #</u>	<u>Name of Standard</u>	<u>Title of Individual Standard</u>
Goal #1		
3.2.7 A	PA-ST	A. Apply process knowledge to make and interpret observations
2.3.8 C	PA – M	C. Measure angles in degrees and determine relations of angles.
2.3.11 A,B	PA – M	A. Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations. C. Demonstrate the ability to produce measures with specified levels of precision.
Goal #2		
3.7.10 A,B	PA-ST	A. Identify and safely use a variety of tools, basic machines, materials and techniques to solve problems and answer questions. B. Apply appropriate instruments and apparatus to examine a variety of objects and processes.
Goal #3		
2.2.8 B	PA – M	B. Add, subtract, multiply and divide different kinds and forms of rational numbers.
2.4.11 E	PA – M	E. Demonstrate mathematical solutions to problems
2.5.11 C	PA – M	C. Present mathematical procedures and results clearly, systematically, succinctly and correctly
2.10.8 A	PA – M	A. Compute measures of sides and angles using proportions, the Pythagorean Theorem and right triangle relationships