

GUIDED PRACTICE

Class: LEVELING PART-1 (CE2020, PLANE SURVEYING)

Date assigned:

Date due:

Time estimate to complete this assignment: 5 HOURS

Overview/Introduction

This class will introduce the general concept of leveling. After learning the concept, students will be divided into groups and use the surveying instrument to conduct the field leveling to measure the vertical elevation of the field points.

Learning Objectives

Basic objectives

1. Define the general concept of leveling.
2. Identify the important steps of the leveling process.

Advanced objectives

1. Review the general concept.
2. Evaluate the field method by performing field experience.
3. Student switches the role at the field performance to learn the different tasks.
4. Closing Minutes guidance, think-peer-share experience.

Preparatory Activities and Resources:

1. Watch the posted videos on Moodle, study the PDF hand-out.

Exercises: Please complete by the start of class on Friday.

- A short Quiz will be posted on Moodle regarding general concept of leveling and set up process

Questions?

If you are stuck, there are multiple ways of attaining assistance. Please feel free to contact me via e-mail (xwei@calstatela.edu), text/call (626-696-6359), or via Moodle message. You may also visit office hours (please see syllabus for times/location).

Lesson Plan

Lesson: Leveling Part 1: Basic Skill for Leveling

Timeframe: Note how long will it take the learner to complete all of the activities from pre-class to post-class activities.

Watch youtube videos: 30 min.

Assignment Reading: 20 min.

Answer pre-class questions/quiz: 10 min.

Class activities: 5 hours

Materials needed: Describe what items will be needed to complete the in-class activities.

Textbook: Elementary Surveying by Ghilani

Pdf handout posted on Moodle

Videos posted on Moodle

Surveying Equipment: Level, tripod, rod, rod level (provided by School)

Objectives: List out the basic objectives tied to pre-class activities and the advanced objectives tied to in-class and post-class activities.

Basic:

- 1. Identify the general Concept of Leveling and field operation.*
- 2. Identify the important steps of the leveling process. (set up the level and how to read the Rod)*

Advanced:

- 1. Review the general concept*
- 2. Evaluate the field method by performing field experience.*
- 3. Student switches the role at the field performance to learn the different tasks.*
- 4. Closing Minutes guidance, think-peer-share experience.*

Background to the Lesson: Note the typical composition of learners in the class, how this lesson fits into the course design/schedule, the prerequisite knowledge required, and typical challenges that learners face with this content area.

Entry Level Civil Engineering students with limited Engineering knowledge and Field Surveying experience. This class will teach them how to measure the vertical elevation by using level and Rod. The prerequisite class is Math1040A.

The typical Challenges are student are not familiar with the surveying equipment. They have to learn not only the general concept to apply but how to operate the equipment in the field.

Introduction to Lesson: Describe the purpose of this content area for learners and an overview of the activities and resources for the flipped lesson.

During the week before the class, the students will watch tutorial videos that explain the general concept of Leveling and the demonstration of the important steps of field Leveling Surveying. After the videos, there are reading the assignment and a small quiz.

During the class instructor will review the concept and demo the set-up process again, then students will be divided into a group for the field performance.

Finally, the student will back to the classroom for the close minute review, through the “muddiest point” and think-peer-share, students will reinforce the concept. The homework will be assigned.

Procedure [Time needed, include additional steps if needed].

Pre-Class Individual Space Activities and Resources: Outline the major steps for the preparatory activities and be sure to tie the steps to the basic learning objectives you have noted above. Note resources required for learner preparation.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: watch the video Leveling Part-1 https://www.youtube.com/watch?v=tNRZPHLwC7k	Introduce students to basic leveling concept	8 mins	Basic 1,2
Step 2: Watch the video Set up, Left Thumbing Rule https://youtu.be/OWERdvgog8w	Explain the important rule as of how to set up the equipment	11 mins	Basic 1,2
Step 3: Watch the video Reading the Rod https://youtu.be/fbwEORw1c9Y	Explain how to read the number on the rod	10 mins	Basic 1.2
Step 4: Reading the PDF handout /textbook chapter posted on the Moodle and do the pre-class questions	Review what had learned and prepare for the class active	30 min	Basic 1,2
Step 5:			

In-Class Group Space Activities and Resources. Outline the major steps for the in-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also, note any resources needed/developed to provide effective active learning activities within the class.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: Review the General Concept	To review and apply information gained from pre-class activities	10	Adv. 1
Step 2: Demonstrate the Set-up process	To review and apply information gained from pre-class activities	10	Adv.1
Step 3: Students will be assigned into groups of 4 or 5, first provide equipment as Level to practice left-thumb rule in the classroom	To review and apply	10	Adv.2
Step 4: Assign each group a field traverse with multi-points, the group will check out other equipment and perform a field leveling project for 3 hours +, each student will take difference role/task during the performance to practice.	Hands-on practice, apply concepts they learned into the field experience as a practical case study.	3 to 4 hours	Adv. 2 ,3
Step 5: Groups will come back to the classroom for the closing minutes. Students are encouraged to submit “muddiest point” questions and discuss by think-peer-share, Instructor will provide the guidance at final. Homework will be assigned and posted, students are encouraged to finish homework in class.	Allow students to self-assess their work and discuss it with peers. The instructor will provide the guidance.	30 to 60 min	Adv.4

Post-Class Individual Space Activities and Resources. Outline the major steps for the post-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also, note any resources learners will need to complete any post-class activities assigned after the group space activities.

Steps	Purpose	Estimated Time	Learning Objective
Step 1: Complete the homework	Some students may not finish the homework in class,	20	Adv. 4
Step 2: Prepare for the future “ Leveling Part 2”			

Evaluation:

Analysis. In this section, note what you think will work, and what challenges you think you may face in implementation.

The student will need more time at the field to master their equipment, ask them to prepare the pre-class activities as watching those videos will get them familiar with the field process and save instructor's time at class for more advanced learning objects.

Not all the students do the prep work. So those students may get "lost" if the instructor teaches in the fast pace during the class activities.

Connections to Future Lessons. In this section, note how you think this lesson plan connects to your next topics in the course.

Next Class will expand the leveling process to profile leveling. For that topic, the understanding of the general concept of leveling is an essential foundation.

What student has learned in this class could be applied to the future lesson, Student could apply the same setup process and rod reading skill to the profile leveling. The answer for the "muddiest point" at closing minutes will help them to clear out the difficult parts.