BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

AET 44 - Grade Setting **2 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level III; English Level II; Math Level III
Transfer Status: CSU
17 hours Lecture
51 hours Lab

This course will cover reading site plans, interpreting grade stakes, and setting grades to ensure that earth-moving work meets specifications, using both manual and Global Positioning Systems (GPS) methods.

II. **OBJECTIVES**

Upon successful completion of this course, the student will be able to:

A. Define and apply terms associated with plan reading, grade setting, and drainage.
B. Interpret construction plans to determine grading requirements.
C. Set grades from a benchmark.
D. Describe and apply proper practices for setting grades using a laser level, GPS or string.
E. Identify and describe methods for maintaining construction site drainage.
F. Describe and perform basic grading operations.
G. Describe and apply proper practices for establishing the grade of a trench and drain pipe.
H. Interpret markings of cut and fill slope stakes.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Introduction and safety training	1.00
2. Introduction to tools and materials	1.00
3. Reading stakes and basic plan reading	1.00
4. Setting stakes and booting up	1.00
5. Shooting grade with a hand level	1.00
6. Basic laser operation	1.00
7. Linking in laser and slopes	1.00
8. Plan reading including elevations, scale and symbols	1.00
9. How to build a slope, 3 to 1, 4 to 1 and set stakes accordingly	1.00
10. How to use swedes	1.00
11. Utilizing GPS	2.00
12. Basic soils, compaction, density and testing	1.00
13. Stringlines, offsets and grade control	2.00
14. Grade setting software, slope and sonar	2.00
Total Hours	17.00

Lab

Topics	Hours
1. Introduction and safety training	3.00
2. Introduction to tools and materials	3.00
3. Reading stakes and basic plan reading	3.00
4. Setting stakes and booting up	3.00
5. Shooting grade with a hand level	3.00
6. Basic Laser set up and operation	3.00
7. Linking in laser and slopes	3.00
8. Plan reading to include elevations, scale and symbols	3.00
9. How to build a slope 3 to 1, 4 to 1 including slope staking	3.00
10. Working with swedes	3.00
11. Utilizing GPS in the field	6.00
12. Basic soils, compaction and testing	3.00
13. Stringline, offsets and grade control	6.00
14. Working with technology relating to slope control	6.00
Total Hours	51.00

IV. METHODS OF INSTRUCTION

A. Group Discussions
B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
C. Demonstrations
D. Problem-Solving Sessions

V. METHODS OF EVALUATION

A. Exams/Tests
B. Papers
C. Performance Examinations
D. Mid-term and final examinations

VI. EXAMPLES OF ASSIGNMENTS

A. Reading Assignments
    1. Read the section in your text on offset stakes and be prepared to discuss with the class.
    2. Read the section in your text on common stake markings and be prepared to participate in a small group discussion.
B. Writing Assignments
    1. Write a 2 page paper on the responsibilities and duties of a grade setter on a job site.
    2. Search grade setting for heavy equipment on the internet. Prepare a written inventory of equipment used by a grade setter and describe the function of each tool.
C. Out-of-Class Assignments
    1. Meet with Operating Engineers Local 3 and complete paperwork to apply for acceptance into their training program.
    2. Visit a construction site to observe safety procedures and workmanship of equipment operators. Summarize your observations in a paper of at least 2 pages.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Capachi, John and Nick. Excavation and Grading Handbook. 1st Edition. Craftsman Book Company, 2005.

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