SURVEYING PRINCIPLES W/LAB
SURV 1550

Class Hours: 3.0 Credit Hours: 4.0
Laboratory Hours: 5.0 Revised: Spring 2011

Catalog Course Description:

The basic theory and applications of measurement with steel tape, transit, level, and total station. Topics include pacing, horizontal and vertical distance measurements, traverse computations and field note.

Entry Level Standards:

Students must be adept in applying their background in trigonometry and geometry to the solution of surveying tasks. They should be thorough and neat in their record keeping and willing to work in teams. Must have completed DSPM 0850 or have instructor approval.

Prerequisites:

MATH 1720 or 1730 or consent of program coordinator

Textbook(s) and Other Course Materials:

Text:
Reference:
Surveying Practice, Phillip Kissam
Surveying, Charles Breed
Other:
- Field Note Book
- Scientific Calculator
- Paper - Pencil
- Flashlight (night students only)

I. Week/Unit/Topic Basis:

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<th>Week</th>
<th>Topic</th>
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| 1    | Lecture: Introduction  
      | Lab: Definitions & History |
| 2    | Lecture: Definitions & History; Types of Surveys; Field Notes  
      | Lab: Error Theory |
| 3    | Lecture: Math Review; Accuracy/Precision & Error  
      | Lab: Pacing; Intro to Steel Tape |
| 4    | Lecture: Taping and Chaining |
II. Course Goals*:

The course will:

A. Enhance the student’s knowledge of the common sources of error in surveying measurements and how to properly minimize them through calculations or field procedure. I & II

B. Accurately record all survey data. I, II, III & IV

C. Accurately calculate and report all survey data. I, II, III & IV

D. Properly use surveying equipment. I, II & IV

E. Make precise measurements in the field through proper field procedure. I, II & IV

F. Demonstrate self initiative to complete all assignments on time. IV

*Letters after course objectives reference the educational outcomes of the Engineering Technology Program.

III. Expected Student Learning Outcomes*:

The student will be able to:
1. Differentiate between accuracy and precision. A
2. Calculate the accuracy of field measurements. A, B & C
3. Calculate the precision of field measurements. A, B & C
4. Identify systematic errors for each type of equipment. A
5. Identify accidental errors for each type of equipment. A
6. Identify common human errors and how to avoid them. A
7. Properly record all field data. B & C
8. Measure horizontal distances, within acceptable limits of precision, by pacing, use of steel tape, and stadia. B,D,E
9. Calculate the appropriate corrections for measurements made with a steel tape. A,C,D
10. Measure vertical distances, within acceptable limits of precision, by differential leveling with a hand level, dumpy level and an automatic level. B,D,E
11. Measure vertical and horizontal angles, within acceptable limits of precision, using a transit, theodolite and a total station. C,D,E
12. Precisely measure a traverse. C,D,E
13. Accurately calculate latitudes, departures and areas of traverses. C
14. Adjust latitudes and departures by a compass or transit rule. C
15. Compute traverse areas by more than one method. C
16. Precisely measure and draw a profile. C,D,E
17. Turn in all work in a timely manner. F

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

V. Evaluation:

A. Testing Procedures:

Four exams will be given. Exams are true-false, multiple choice, matching, short answer/essay. Exams are given over the internet at www.pstcc.edu, online courses and must be taken by the established deadline. Exam 4 has a problem solving take-home portion.

When a student misses an exam due to illness, he must contact the instructor immediately upon return and make-up the exam within one week. There will be a lab field final - no make-up.

Quizzes:
Quizzes may be given by the instructor. Most quizzes will be un-scheduled and randomly given. They cover the previous session’s materials or the reading assignment for that day. There is no make-up or extra credit given for quizzes missed.

Homework:
Students may also be required to hand in answers to select questions at the end of each chapter or other appropriate homework at the instructor's discretion. All written- assignments must
handed in on 8 ½” x 11” paper with smooth edges, or forms provided by your instructor. All written assignments will be assessed a 10% penalty for each school day it is late. All student work submitted for evaluation may be retained by the instructor.

B. Laboratory Expectations:

Each student is expected to complete all lab assignments in cooperation with assigned lab partners. Each student must complete a set of field notes for each lab. Each student will turn in a copy of her/his field notes along with appropriate calculations by the assigned deadline. All lab reports will be assessed a 10% penalty for each school day it is late.

C. Field Work:

N/A

D. Other Evaluation Methods:

A subjective evaluation based on attendance, classroom participation and attitude may be included.

E. Grading Scale:

CLASSROOM (55-60%)
Final grades will be computed from the grades obtained on homework, quizzes and examinations as follows:
Quizzes & Homework = 20% - 25%
Examinations = 15% - 25% Each
LAB (40-45%)
Final grades will be determined by grades obtained on field exercises. Each exercise is graded on completeness and neatness of field data, precision of field measurements, accuracy of calculations and graphic representation of data.
Attendance/Equipment Usage 15%-20%
Computations and drawings 15%-20%
Field Notes 40%-50%
Lab Final 20%

Grades are based on the following:
90 - 100 A
85 - 89 B+
80 - 84 B
75 - 79 C+
70 - 74 C
60 - 69 D
Below 60 F

VI. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of the Learning Division.
B. Academic and Classroom Misconduct:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:
• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

C. Accommodations for disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/.

D. Use of Equipment:

Any act of misuse, vandalism, malicious or unwarranted damage or destruction, defacing, disfiguring, or unauthorized use of property/equipment belonging to Pellissippi State is subject to disciplinary sanction.