

CE 200 SURVEYING

Required Course

Summer 2009

Instructor: Name: Haluk Özener
Office Hours: M 15:00-16:00, T 15:00-16:00
Course Data: Hours: 09:00-17:00 (Lecture+Field)
Room: M 1100

Course Description (Catalog):

CE200 Surveying

(3+0+0)3

Practice the use of measuring tape, theodolite and level. Surveying of small areas and buildings. Locating contour lines on a plan. Levelling vertical distances and angular measurements. Traverse calculation and Tacheometric method for drawing 3D plan. Area and volume calculation. Four weeks of fieldwork and a final exam.

Prerequisite: There is no prerequisite for this course.

Course Objectives (Learning Outcomes):

To provide students the necessary knowledge and skills for surveying problems.

To provide students a better understanding of data quality and how instruments and field techniques contribute to error. Students appreciate the concepts of accuracy and precision.

To make students develop an appreciation of how one set of surveying data relates to another. Students learn the importance of referencing their projects properly.

To make students learn to work with others, respect the contributions of others, solve difficulties, and understand responsibility.

Textbook: N/A

Reference Books:

Herubin, C. A., *“Principles of Surveying”*, Pearson Education, 1998.

Bannister, A., *“Surveying”*, Addison Wesley Longman, 1998.

Wolf, P. R. and Ghilani, C. D., *“Elementary Surveying: An Intro. to Geomatics”*, Prentice Hall, 2001.

Kavanagh, B. F., *“Surveying: Principles and Application”*, Prentice Hall, 2002.

Kavanagh, B. F., *“Geomatics”*, Prentice Hall, 2002.

Curricular Context

This course is about engineering science at a rate of 30%, consisting of the error theory, principles of error correction, area and volume computation, coordinate geometry and principles of modern surveying technology. The remaining portions of the course emphasize surveying practice and measurement. This course is involved in proper design of surveys of buildings and areas.

Laboratory and Computer Usage:

There is no laboratory session. Students are encouraged but not required to use software for drawing plans and forming calculation tables.

Class Policies:

Fieldbook: Students will have a fieldbook to draw sketch, to note measurements and observations, to perform calculations and to write a separate report for each fieldwork activity. 50% of the course grade.

Final exam: Comprehensive exam at the end of the course, 50% of the course grade.

Contribution of the Course to Program Outcomes:

- (a) An ability to apply knowledge of mathematics, science and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Course Assessment:

Course will be assessed on the basis of the accomplishments regarding the course objectives and the contributions to the program outcomes.

Week	Topics	Homework Assignment	Content
1	Introduction, basic definitions, horizontal distance measurements, surveys of small areas and buildings	Fieldwork 1-2: methods of distance measurements, ranging, errors, report writing and sketch drawing	Concepts of surveying methods and measuring instruments
2	Making contour map of small areas by two different methods	Fieldwork 3: locating contour lines on a plan and levelling	Measurement techniques in making contour map and applications
3	Solving a common problem in civil engineering, coordinate calculations	Fieldwork 4: angular measurements	Use the techniques taught in the course and the concepts of angles and coordinates
4	Area and volume calculation by several methods, demonstration of recent technology in surveying (EDM and GPS)	Fieldwork 5, Officework 1-2-3: traverse calculation, indirect measurement of a vertical line, area and volume calculations	Recent technologies in surveying for engineering applications