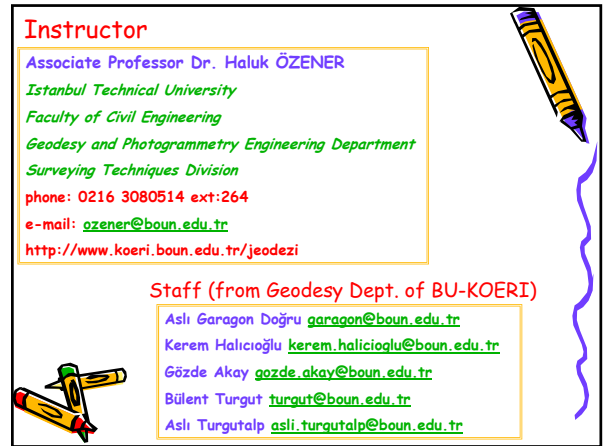




SUMMER COURSE
August 6, 2007

CE200 SURVEYING

INTRODUCTION



Instructor

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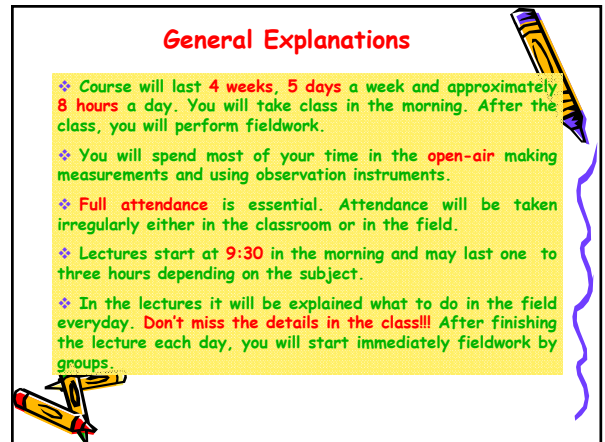


Course Web Site

Lecture Notes & Works will be available at the web site.
❖ http://www.koeri.boun.edu.tr/jeodezi/akademik/ce200/ce200_surveying.htm

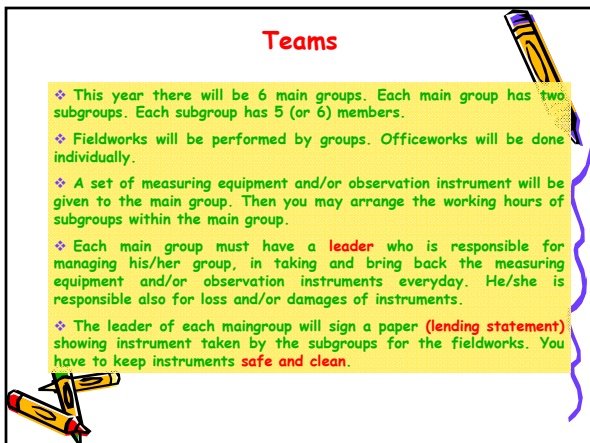
Reference Books

- ❖ Construction Surveying and Layout, *Wesley G. Crawford*
- ❖ Surveying, *Moffitt & Bouchard*




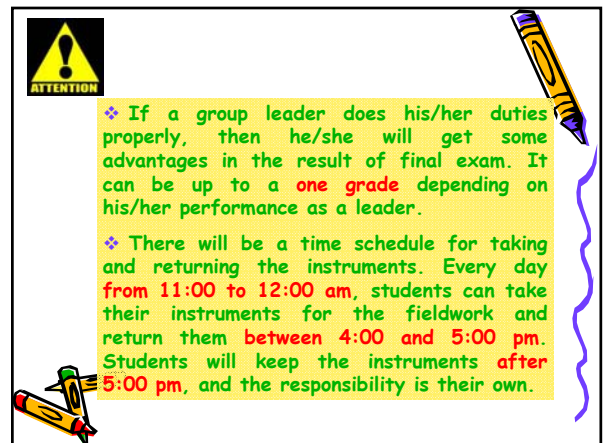
General Explanations

- ❖ Course will last **4 weeks, 5 days** a week and approximately **8 hours** a day. You will take class in the morning. After the class, you will perform fieldwork.
- ❖ You will spend most of your time in the **open-air** making measurements and using observation instruments.
- ❖ **Full attendance** is essential. Attendance will be taken irregularly either in the classroom or in the field.
- ❖ Lectures start at **9:30** in the morning and may last one to three hours depending on the subject.
- ❖ In the lectures it will be explained what to do in the field everyday. **Don't miss the details in the class!!** After finishing the lecture each day, you will start immediately fieldwork by groups.



Teams

- ❖ This year there will be 6 main groups. Each main group has two subgroups. Each subgroup has 5 (or 6) members.
- ❖ Fieldworks will be performed by groups. Officeworks will be done individually.
- ❖ A set of measuring equipment and/or observation instrument will be given to the main group. Then you may arrange the working hours of subgroups within the main group.
- ❖ Each main group must have a **leader** who is responsible for managing his/her group, in taking and bring back the measuring equipment and/or observation instruments everyday. He/she is responsible also for loss and/or damages of instruments.
- ❖ The leader of each main group will sign a paper (**lending statement**) showing instrument taken by the subgroups for the fieldworks. You have to keep instruments **safe and clean**.



- ❖ If a group leader does his/her duties properly, then he/she will get some advantages in the result of final exam. It can be up to a **one grade** depending on his/her performance as a leader.
- ❖ There will be a time schedule for taking and returning the instruments. Every day **from 11:00 to 12:00 am**, students can take their instruments for the fieldwork and return them **between 4:00 and 5:00 pm**. Students will keep the instruments **after 5:00 pm**, and the responsibility is their own.

Requirements

- ❖ Each student must have a **fieldbook** to draw sketch, to note measurements and observations, and to write a separate report for each fieldwork and officework.
- ❖ It is advised to buy a "grid ruled notebook" with approximately 60 leaves. You may take notes in it also in the lectures. Loose leaves will not be acceptable as fieldbook.
- ❖ There will not be a formal midterm exam. Midterm points will be given by
 - inspecting the students involvements (or attendance) in the fieldworks
 - checking whether students fieldbook in good order (tidy, neat) and complete.

o This 3-credit course is considered as a 4-week apprenticeship. You will have 5 fieldwork studies, 3 officeworks and a demonstration during the course. Fieldworks and officeworks include below subjects:

- o Horizontal distance measurements
- o Erecting and dropping a perpendicular
- o Surveys of buildings
- o Vertical distances
- o Checking instruments
- o Angular measurements
- o Traverse calculation
- o Calculation of areas and volumes

o Please download and read carefully the lecture notes, glossary and other material which will be helpful to have an idea about what you will likely encounter during the course.



- o Reports of fieldworks will be submitted as subgroups but each person of the subgroups will have the reports in their fieldbooks individually. **No copy** in the fieldbooks! Each subgroup will have a **binder** which will keep the submitted fieldworks in it. There will be a time schedule for photocopying the reports if you need. Every day from 3:00 to 3:30 pm, students can take their reports for copying and bring them back.
- o Officeworks will not be submitted, they will be in the fieldbooks.
- o Please keep in touch with the assistants during the fieldworks, ask for their approvals, and always bring your **raw data** before going to the next step.

Course Plan

Lecture 1.1 - Surveying and Geodesy, horizontal planes and lines, vertical plane and lines, purposes and types of techniques of surveying, horizontal position fixing, errors, methods of distance measurement, taping, brief explanation of fieldwork 1 (showing instruments to be used).

Lecture 1.2 - Detailed explanations of fieldwork 1 including the aim and operations to be performed, horizontal distance measurements of a sloped line, ranging a line over a hill, methods of recording on the sketches (single line, continuous line running measurements), warning about practicing and report writing.

Lecture 2.1 - Surveys of small areas and buildings by intersecting arc, give some examples, **2.2** - describe fieldwork 2, discussion about the principles of a survey (conclusions from experiences), hints for drawing.

Lecture 3.1 - Locating contour lines on a plane, explain the aim of fieldworks, describe the operations of fieldwork 3, phase 1.

Lecture 3.2 - Differential leveling, fundamentals, leveling instrument, operations, calculations, levelbook (simple), series leveling, book keeping, show main groups in the field how to use a level instrument, describe the operations of fieldwork 3, phase 2.

Lecture 3.3 - Discussion about experiences from fieldwork 3.

Lecture 4.0 - Angular measurements and angle measuring instruments (tachometers and theodolites), concepts of horizontal-vertical and inclined angles, rectangular coordinates, fieldbook for angular measurement (method of direction in series of sets), give officework 1.

Lecture 4.1 - Traverse survey and coordinates, the aim of fieldwork 4, describe the operations of fieldwork 4, phase 1 (finding the coordinates of reference points by traversing), show main groups in the field how to use an angle measuring instrument.

Lecture 4.2 - Tacheometric method for combined position fixing, calculations for horizontal and vertical distances from tacheometric readings, fieldbook, plotting, describe the operations of fieldwork 4, phase 2.

Lecture 5.0 - Indirect measurement of a vertical line segment by using an angle measuring instrument, describe the operations of fieldwork 5.

Lecture 6.0 - Areas, officework 2.

Lecture 7.0 - Volumes, officework 3.

Practises

Fieldwork 1 (1a-1b): Horizontal distance measurement by the method of taping.

Fieldwork 2: Surveys of small areas and buildings by the method of intersecting arcs.

Fieldwork 3: Making contour map of a small area by intersecting arcs and differential leveling

- ✓ **Phase 1:** Horizontal position fixing of contour points by intersecting arcs.
- ✓ **Phase 1-a:** Two-peg test, Loop test.
- ✓ **Phase 2:** Vertical position fixing of contour points by intersecting arcs.

Fieldwork 4: Making contour map by tacheometric method.

- ✓ **Phase 1:** Finding the coordinates of reference points by traversing.
- ✓ **Phase 2:** Contour by tacheometer.

Fieldwork 5: Indirect measurement of a vertical line segment.



Officeworks

Officework 1: Coordinate calculations, (direct and inverse problems)

Officework 2: Area calculations.

Officework 3: Volume calculations.

Demonstrations 1 & 2 : Electronic Distance Measurement, GPS.



Course Schedule

8/6/2007	Registration & Forming Groups & Introduction		
8/7/2007	Lecture 1.1 + Fieldwork 1 & 1a & 1b	→ WEEK 1	
8/8/2007	Lecture 1.2 + Fieldwork 2		
8/9/2007	Lecture 2.1 + 2.2 + Fieldwork 2		
8/10/2007	No Lecture		
8/13/2007	Lecture 3.1 + Fieldwork 3 Phase 1	→ WEEK 2	
8/14/2007	Lecture 3.2 + Fieldwork 3 Phase 1 cont.		
8/15/2007	Lecture 3.3 + Fieldwork 3 Phase 1-a & 2		
8/16/2007	Lecture 4.0 + Fieldwork 3 Phase 2 cont. + Officework 1	8/20/2007	Lecture 4.1 + Fieldwork 4 Phase 1
8/17/2007	No Lecture + Fieldwork 3 Phase 2 cont. + Officework 1	8/21/2007	Lecture 4.2 + Fieldwork 4 Phase 2
		8/22/2007	No Lecture + Fieldwork 4 cont.
		8/23/2007	Lecture 5.0 + Fieldwork 5
		8/24/2007	No Lecture + Fieldwork 4 & 5 cont.
		8/27/2007	Lecture 6.0 + Officework 2
		8/28/2007	Lecture 7.0 + Officework 3
		8/29/2007	Demonstration
		8/30/2007	No Lecture
		8/31/2007	Exam



← WEEK 3

← WEEK 4