

Surveying I (CE 370) [0]

Sameh Saadeldin Ahmed



Associate Professor of Environmental Eng.
Civil and Environmental Engineering Department
College of Engineering
Majma'ah University
s.mohamed@mu.edu.sa
faculty.mu.edu.sa/smohamed/SaMeH

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Course Objectives

This course covers the principles of measurements of distances, elevations, and angles. It also includes basic error theory in measurements and calculations, traverse field techniques and office calculations, and basic principles of surveying and map making.

Objectives

Provide the student with the principles of surveying and training on surveying instruments, in addition to acquire him skills in the following main topics :

- Technical knowledge about different surveying's.
- Reading & drawing Cadastral maps for different projects.
- Operating Surveying instruments to get data for establishing a formal map.
- Computing areas on maps & from field measurements.
- Computing the co-ordinates of the positions & setting the positions on map.

Course Topics

- Basic Definitions
- Units of measurements
- Measurements of distances
- Measurements of angles
- Random errors
- Traverse surveys and computations
- Leveling
- Profiles and areas measure
- Field operations with transit
- Electronics surveying
- Earthwork quantities
- Contour maps

Student's duties

1. Students are required to attend lectures in regular base.
2. Students are asked to revise in advance the contents of the course.
3. Participating in the discussions and solving the exercises is a must for all the students. Consulting the course teacher at any time during the office hours.

Contents (week by week)

Week	Subject	Content
1 st week	<i>Basic Definitions</i>	<ul style="list-style-type: none">• What is Surveying?• Plan Surveying• Topographic Surveying• Geodesy• Photogrammetric• GIS, Remote Sensing• GPS• Field notes

Contents (week by week)

Week	Subject	Content
2 nd week	<i>Units of Measurement</i>	<ul style="list-style-type: none">• Metric equivalents• Tables• Field notes• Methods of keeping notes• Errors and mistakes• Accuracy and Precision
3 rd week	<i>Measurement of Distances</i>	<ul style="list-style-type: none">• Horizontal distance• Chains• Taps and its equipment• slope measurement by vertical angles

Contents (week by week)

Week	Subject	Content
4th week	<i>Measurement of Angles</i>	<ul style="list-style-type: none">• Horizontal angles• Vertical angles• Angles by compass• Angles with the plane tables• Cadastral surveying• Practical exercises• Planimeter and its applications
5th week		

Contents (week by week)

Week	Subject	Content
6 th week	<i>Random Errors</i>	<ul style="list-style-type: none">• Nature of random errors• Condition of least squares• Standard error• Measures of precision
7 th week		<ul style="list-style-type: none">• Weighted measurements• Simple adjustment• Adjustment of weighted measurement

Contents (week by week)

Week	Subject	Content
8 th week	<i>Traverse surveys and computations</i>	<ul style="list-style-type: none">• Traverse• Open traverse• Closed Traverse• Compass Traverse• Traverse computations• Traverse closure• Methods of plotting traverses

1st mid term exam

- **The exam will take place according to the college announcement**
- **Total marks for this exam is : 15 marks**

Contents (week by week)

Week	Subject	Content
9 th week	<i>Leveling</i>	<ul style="list-style-type: none">• General• Longitudinal leveling• Cross sections• Trigonometric leveling• Direct differential leveling• the Dumpy level• Sources of error in leveling

Contents (week by week)

Week	Subject	Content
10 th week	<i>Profiles and areas measurement</i>	<ul style="list-style-type: none">• Longitudinal and transverse sections• Rise and fall method• Samson's method

Contents (week by week)

Week	Subject	Content
11 th week	<i>Field operations with transit</i>	<ul style="list-style-type: none">• Introduction• Measuring interior angles• Laying off angles• Establishing points on a straight line• Location of a point

Contents (week by week)

Week	Subject	Content
12 th week	<i>Electronics surveying</i>	Electronic distance measurement devices

2nd mid term exam

- **The exam will take place according to the college announcement**
- **Total marks for this exam is : 15 marks**

Contents (week by week)

Week	Subject	Content
13 th week	<i>Earthwork quantities</i>	<ul style="list-style-type: none">• Remarks• Cross Sections• Distance between Cross sections• Calculation of areas• Volume by average end area• Earthwork quantities

Contents (week by week)

Week	Subject	Content
14 th week	<i>Contour maps</i>	<ul style="list-style-type: none">• Constructing of contour maps using Surfer software

Grading Policy

Grading Component	Marks	Exam Date
Mid Exam (1)	15%	To be announced
Mid Exam (2)	15%	To be announced
Practical exam	10%	One week before the final exam
Quizzes	10%	
Assignments, HWs	10%	
Final exam	40%	
Total	100%	

Textbook and References

Textbook:

Barry, F.K. and Gelnnbind, S.J., “*Surveying: Principles and Applications*”, 5th edition, Prentice – Hall.

Reference:

Francis H. Moffitt and Harry Bouchard, “*Surveying*”, 6th edition, Harper & Row Publishers, New York, 1954.