



زانکۆی سه‌لاحه‌دین - هه‌ولێر  
Salahaddin University-Erbil

**Department of Basic Scientific**

**College of Agricultural Engineering Sciences**

**Salahaddin University- Erbil**

**Subject: Principles of Surveying**

**Course Book – 1st Stage / Spring Semester**

**Lecturer's Theoretical name: Dr. Kamyar M. Mohammed**

**Lecturer's Practical name: Mr. Sherwan Y. Hammad, Mr. Ragheb Mohammad**

**Academic Year: 2022-2023**

## Course Book

<b>1. Course name</b>	<b>Principles of Surveying</b>
<b>2. Lecturer in charge</b>	Kamyar M. Mohammed M.Sc. Mr. Sherwan Y. Hammad, Mr. Haval Haji and Ragheb Mohammad
<b>3. Department/ College</b>	Soil and Water Dept and Forestry Dept. Agricultural Engineering Sciences
<b>4. Contact</b>	E-mail: Kamyar.mohammed@su.edu.krd +9647504612509  Mr. Sherwan Yassin Hammad E-mail: Sherwan.hammad@su.edu.krd Tel: 07504762389  Mr. Ragheb Mohammad Email: ragheb.mohammad@su.edu.krd  Tel : 0751 1283241
<b>5. Time (in hours) per week</b>	Theory: 6 and Practical: 15
<b>6. Office hours</b>	5 days a week
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	Dr. Kamyar Mutalib Mohammed  - My name is Kamyar M. Mohammed. I have B.Sc. in Soil and Water Science at Salahaddin University in 2006 and getting Master degree in Soil Physics at Salahaddin University in 2012. I am Ph. D. in Soil and Water Conservation branch.  - Mr. Sherwan Yassin Hammad Bachelor's degree in Forestry and Horticultural Science in the year of 2011-2012 in College of Agricultural/ Salahaddin University. However, I've got my Master Degree in Organic Agriculture in the year of 2015 in Italy. Now, I am working as Assistant Lecturer in the Forestry Department, College of Agricultural Engineering Sciences, Salahaddin University-Erbil.  Mr. Ragheb Mohammad I completed my B.Sc. in Salahaddin University – Forestry Department (2010 - 2011). I got my Master degree at Czech University of Life Sciences - Prague, Czech Republic; Master's

	title (Farmers' use and preferences of trees in Kurdistan region of Iraq). Currently, I am working as Assistant Lecturer in Forestry Department - College of Agricultural Engineering Sciences, Salahaddin University - Erbil and my specific specialize is Forestry Engineering.
<b>9. Keywords</b>	Surveying, Taping, Pacing, Levelling, contouring, land survey, Theodolite, Global positioning system (GPS), Detail Survey.

## **10. Course Overview:**

Surveying is the art of determining the relative positions of different objects on the surface of the earth by measuring the horizontal distances between them, and by preparing a map to any suitable scale. Thus, in this discipline, the measurements are taken only in the horizontal plane.

Levelling is the art of determining the relative vertical distances of different points on the surface of the earth. Therefore, in levelling, the measurements are taken only in the vertical plane.

Surveying may be used for the following various applications:

- 1- To prepare a topographical map which shows the hills, valleys, rivers, villages towns, forest, landscaping, etc. of a country.
- 2- To prepare a cadastral map showing the boundaries of fields, houses and other properties.
- 3- To prepare an engineering map which shows the details of engineering works such as roads, railways, reservoirs, irrigation canals, etc.
- 4- To prepare a contour map to determine the capacity of a reservoir and to find the best possible routes for roads, railways, etc.

To learn the student about the importance of Surveying tools and material for life; today creating more buildings, bridges, landscape design and parks which build by this process and application. Based on this course student will be able to learn the principles of surveying and how to measure the field areas and design the field regarding their plan. In the future students will be able to get a surveyor's job as an agricultural engineer in their field. However, surveying is very important in the public and the private sectors as well.

## 11. Course Objective:

### UNDERGRADUATE LEARNING OBJECTIVES

These statements are made operational by skills and abilities common to the theory and practice of surveying and levelling that our undergraduate students are expected to acquire:

- Have the ability to apply knowledge of mathematics, science and engineering to understand the measurement techniques and equipment used in land surveying.
- To apply surveying principles in a range of sites and scales.
- To enable students to understand theory and practice of land surveying.
- To enable students in reading and preparing surveying maps.
- To develop skills to use modern survey instruments.

Additionally, it is our philosophy that our students be compelled to bring their creative talent to the public landscape. Further, we hope our students will self-actualize through their educational process while being grounded in theory, methods (including field), construction craft, and studio design.

The aim of surveying is to prepare a map to show the relative positions of the objects on the surface of the earth. The map is drawn to some suitable scale. It shows the natural features of a country, such as towns, villages, roads, railways, rivers, etc. Maps may also include details of different engineering works, such as roads, railways, irrigation canals, landscape architecture, etc.





Theodolite and total stations	2 hours
Traverse Surveying Types of traversing	2 hours
Global positioning system(GPS) Principles of GPS Errors in GPS GPS procedures	2 hours
Second Examination	2 hours
Detail Survey	2 hours
Curve ranging	2 hours
Setting out construction works	2 hours
Mensuration – areas Mensuration – volumes.	2 hours
<b>18. Practical Topics</b>	<b>Lecturer's name Mr. Sherwan Yassin, Mr. Ragheb Mohammad</b>
Pacing, Setting out the straight line and Distance Measurements	3 hours
Setting out Right Angles	3 hours
Calculating Surface Areas of Irregular Shaped Field	3 hours
Taping Around Obstacles	3 hours
Setting up an Optical Level	3 hours
First Examination	3 hours
Leveling (Elevations), Open level Traverse Differential Leveling	3 hours
Leveling (Elevations), Closed loop level traverse	3 hours
Error correction in Closed loop level traverse Elevation	3 hours
Profile leveling (longitudinal leveling) and Cross sectional levelling	3 hours



Topographic Survey (contouring)	3 hours
Topographic Survey (contouring)	3 hours
Second Examination	3 hours

### 19. Examinations:

1. Compositional: In this type of exam the questions usually start with Explain how, what are the reasons for...? Why...? How....?

Example :

Answer the following.

1. Source of taping errors.
2. Classification of surveying.

2. Define the following terms:

1- Surveying. 2- Fore sight. 3- Turning Point.

3. Multiple choices:

In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase.

Examples :

1. Contour lines are:
  - A. Actual lines.
  - B. Imaginary lines
  - C. Opened lines.
  - D. Parallel lines.

### 20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

### 21. Peer review:

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject)..*