**The University of Jordan**

**Faculty of Agriculture Department of Land, Water, and Environment**

**Program: 2015-2016/First Semester**

**Soil Survey and Land Use (0654323)**

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| **Credit hours** | **3** | **Level** | **Bsc** | **Pre-requisite** | **Soil Chemistry**  **Soil physics** |
| **Coordinator/ Lecturer** | **Prof. Awni Taimeh** | **Office number** | **114** | **Office phone** | **22445** |
| **Course website** | **On UJ E Learning portal** | **E-mail** | **ataimeh@ju.edu.jo** | **Place** | **LWE Seminar Room** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Office hours** | | | | | |
| **Day/Time** | **Sunday** | **Monday** | **Tuesday** | **Wednesday** | **Thursday** |
| **Day** | **\*** |  | **\*** |  | **\*** |
| **Time** | **9-10** |  | **9-10** |  | **9-10** |

**Course Description**

Objectives of surveys, types and scale of surveys.Soil classification systems. Design of and execution of surveys, surveys quality control.Land evaluation Systems, Land use for Agricultural Purposes, Land use for non- Agricultural Purposes.

**Learning Objectives**

Students will:

**Course Objectives:** Students will:

* Understand Soil Survey Methods and Preliminary Preparations
* Understand the base maps, identification and soil interpretation.
* Be able to understand current trends in land use planning
* Be able to conduct soil survey and land use planning.

**Intended Learning Outcomes (ILOs):**

Successful completion of the course should lead to the following outcomes:

**A. Knowledge and Understanding:** Student is expected to

A1- Soil variation and their impacts on land use

A2- The significance of soil mapping and interpretation on protection of land resources

A3: The relationship between various environmental aspects of land and soil as an important component

**B. Intellectual Analytical and Cognitive Skills:** Student is expected to

B1- Incorporate various types of data to achieves different objectives

B2- Use multilayer data in the for specific and general objectives

B3- Improve capacity to correlate between different land components

**C. Subject- Specific Skills:** Students is expected to

C1- Produce soil map for different objectives

C2- Participate in land use planning

C3- Master Soil data interpretation

C4- Integrate different ecological data with soil information

**D. Transferable Key Skills:** Students is expected to

D1- Be able to carry soil mapping at different scale

D2- Be able to interpret soil reports for different utilizations

D3- Be able to incorporate soil interpretation with land use planning

ILOs: Learning and Evaluation Methods

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| --- | --- | --- |
| **ILO/s** | **Learning Methods** | **Evaluation methods** |
| **A. Knowledge and Understanding** | Lectures and Discussions | Exam |
| **B. Intellectual Analytical and Cognitive Skills** | Lectures ,Discussions, and Home works | Exam |
| **C. Subject- Specific Skills** | Lectures, and Discussions | Exam |
| **D. Transferable Key Skills** | Homework and Assignments | Evaluation |

**Course Contents**

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| **Content** | **Reference** | **Week** | **ILO/s** |
| **Introduction­ Purpose of the surveys**   * Soil Forming Factors * Pedon an polypedon, Soil individual * Role of soil maps. * Data needed for soil surveys. * Objectives of land use planning | Soil Survey Manual Chapter 1 | 1-2th weeks |  |
| **Soil Survey Methods and Preliminary Preparations:**  ­ Soil survey Methods  ­Tools  ­Legend establishment  ­Office investigation  ­Boundary delineation office and field  ­ Planning for soil surveys  ­ Selection of base maps, scale etc.  -Production of base maps.  ­ Kinds of surveys  ­ Preliminary studies  ­ Field records­ Data sheets | Soil Survey Manual Chapte 2, 3r | 2-4th weeks |  |
| **Base Maps**  - Types of base maps  ­ Air-photo Interpretation  ­Aerial surveys, stereoscopy  -Soil interpretation  -Identification  -Photo mosaics | Soil Survey Manual Chapter | 4-6th weeks |  |
| **Production of Soil Maps**  ­Source of information  ­Character of soil maps  ­Plotting of field data  ­Quality of soil map quality, soil variability  ­Soil survey quality control  ­Intensity of observations and sampling  ­Standardization  ­Map correlation  ­Final maps  ­ Map scale, field, publication | Soil Survey Manual Chapter 3-4 | 6-7th weeks |  |
| **Mapping units: MU**  ­ Kinds of mapping units.  ­ Rules for nomenclature  ­ Soil legend  ­ Soil boundaries  ­ Soil grouping  ­ Soil Taxonomy | Soil Survey Manual Chapter3,4 | 8-9th weeks |  |
| **Soil Correlation**  - Data correlation  ­ Related soil data  ­ Information and display systems  ­ Maps  ­ Reports  ­ Worksheets  ­ Geographic information system | Soil Survey Manual Chapter 6 | 9-10th weeks |  |
| **Interpretation of Soil Maps**  ­ Kinds of soil data  ­ Soil properties and associated land features  ­ Predicting performance of soil  ­ Soil interpretation at the family level  ­ Soil information system  ­ Soil survey interpretation  ­ Agricultural utilizations | Soil Survey Manual Chapter 6 | 10-11th weeks |  |
| **Soil Information Database**  ­ Soil information system  ­ Field data  ­ Laboratory data  ­ Procedures  - Role of soil information system  - Modern soil information system  ­ Benchmark Soil (BMS)  ­ Criteria for BMS  ­ Management of BMS data | Soil Survey Manual Chapter 5 | 11-12th weeks |  |
| **Land Use**  ­ Land use planning  ­ What do we plan.  - Methods of land use planning  ­ Source of information  ­ Land Evaluation  ­ Land capability classification  ­ Soil capability classification  ­ Soil classification/Irrigation  ­ Engineering interpretation  - Role of database  - Current trends in land use planning | Soil Survey Manual Chapter 6 | 12-15th week |  |
| Soil mapping: field mapping of soils,, soil interpretation | :Soil Survey Manual Chapter | 15-16th week |  |

**Learning Methodology**

## The course will be structures mainly in lectures; and discussions, homework, drop quizzes, and applications.

# Evaluation

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| **Evaluation** | **Point %** | **Date** |
| **Midterm Exam** | 15 | 11 / 11 / 2015 |
| **2nd Exam** | 15 | 9 / 12 /2015 |
| **Homework an Quizzes** | 20 |  |
| **Final Exam** | 50 | 6 / 1 / 2016 |

# References:

1­ Soil Survey Manual Handbook No.1¸ SCS USDA.

2­ National Soil Handbook No.436 SCS, USDA.

3­ Soil Survey and Land Use Planning, L.Ê Bartelli, ASA.

4­ Aerial­ Photo Interpretation in Classifying and Mapping Soils Handbook No.294, USDA.

5­ Interpretation of Aerial Photographs, T.E. Avery

**Intended Grading Scale (Optional)**

0-35 **F**

36-39 **D**-

40-47 **D**

48-51 **D+**

52-55 **C**-

56-63 **C**

64-67 **C+**

68-71 **B**-

72-79 **B**

80-83 **B+**

84-87 **A**-

88-100 **A**

**Notes:**