



# Course Specification

## (Bachelor)

**Course Title:** Fundamentals of Soil Science

**Course Code:** APSA1601

**Program:** Sustainable Agriculture Techniques

**Department:** Enter Department Name .

**College:** Applied College

**Institution:** Umm Al-Qura University

**Version:** Version 1

**Last Revision Date:** 16 June 2025



## Table of Contents

<b>A. General information about the course:</b> .....	3
<b>B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods</b> .....	4
<b>C. Course Content</b> .....	4
<b>D. Students Assessment Activities</b> .....	5
<b>E. Learning Resources and Facilities</b> .....	5
<b>F. Assessment of Course Quality</b> .....	5
<b>G. Specification Approval</b> .....	6



## A. General information about the course:

### 1. Course Identification

#### 1. Credit hours: (3 credit hours )

3 credit hours

#### 2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others

B. ☒ Required ☐ Elective

#### 3. Level/year at which this course is offered: ( 1<sup>st</sup> year / level 1)

#### 4. Course General Description:

An introduction to soils, its components and its relationship to the environment. The importance of soils, and plants. Important physical properties, role of soil constituents; origin, nature, and classification of parent materials; soil genesis, classification, and survey; soil fertility and chemical properties; soils and the world's food supplements

#### 5. Pre-requirements for this course (if any):

None

#### 6. Co-requisites for this course (if any):

None

#### 7. Course Main Objective(s):

By the end of the course, students will be able to:

- To provide students with the knowledge about soils and their physical, chemical, and biological properties.
- To provide students with the knowledge to understand the relationship of soils to their environment.
- To provide students with the knowledge to recognize the importance of physical properties and the role of soil constituents.
- To provide students with the knowledge to determine the significance of soils' origin, nature, and classification of parent materials.
- To provide students with the knowledge to describe the soil genesis, classification, and survey; soil fertility and chemical properties; and soils and the world's food.



## 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		
4	Distance learning		

## 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	42
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		72

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0				
1.1	Comprehensive knowledge of rocks and minerals, their composition, and the types of soils formed from different parent materials	K1	Lectures, diagrams, group discussions	Quizzes, final exam
1.2	Understand the role of soil-forming factors and processes in soil formation	K2	Case-based teaching, examples from local crops	Assignments, midterm, final exam





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.3	Identify various soil physical, chemical, and biological properties and their impact on plant growth.	K2	Lectures, comparison charts, visual aids	Quiz, presentation
2.0				
2.1	Explain how soil surveys are prepared and used.	S4	Group discussions , real-life examples	Crop report, oral questioning
2.2	Name and classify the essential elements in soil and explain how the plants absorb them	S1	Group discussions ,real-life examples	Project presentation, report
2.3	Describe soil pH, how it develops, and its effects on plant growth.	S3	•Class discussions	Homework and Quizzes. • Midterm and final exams
2.4	Explain what organic matter is, how it forms, and what it does in the soil.	S4	•Class discussions	Homework and Quizzes. • Midterm and final exams
3.0				
3.1	Analyze and evaluate time management, discipline, and also to ethical behavioral, respect from different points of view.	V1	Classroom discussions , field-relevant ethics	Oral participation, report
3.2	Learn continuously through self-reflection and or experience to recognize the value of learning	V3	Classroom discussions , field-relevant ethics	Assignments (Individual and group) • Presentation (Individual and group) assessments.
3.3	Perform effective communication and positive relation with others and work as an influential team member.	V2	Classroom discussions , field-relevant ethics	Assignments (Individual and group) • Presentation (Individual and group) assessments.



### C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to soil science and its important in agriculture.	2
2.	Soil factor (soil formation, soil Origin, structure), Factors influencing soil formation	4
3.	Soil classification, Soil orders , Categories and nomenclature of soil taxonomy, Soil textural classes	4
4.	Soil physical properties, Texture, Structure, Color ,Profiles, Bulk Density Particle density, Pore space, Soil management as applied to physical properties	4
5.	Soil chemical properties.pH, salinity, cation exchange capacity, nutrient availability.	2
6.	Mid- Term Exam	2
7.	Diversity of soil organisms, Influence of soil microorganisms, The soil environment and organisms, and organic matter	2
8.	Sustainable soil management:organic matter, composting, crop residue use.	2
9.	soil water	2
10.	Major Causes of soil degradation	2
11.	Group work: developing kind of rocks and minerals, their composition and the types of soils formed from different parent materials.	2
12.	Course review and student presentations	2
<b>Total</b>		<b>30</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Periodical Exam(s)	3	10%
2.	Mid Term Exam (Theoretical)	6	20%
3.	Mid Term Exam (practical)	7	10%
4.	Reports and essay	5	10%
5.	Final Practical Exam	15	10%
6.	Final Exam	16	40%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).



## E. Learning Resources and Facilities

### 1. References and Learning Resources

Essential References	Tan, K. (2000): Environmental Soil Science. Marcel Dekker Inc., NY, USA *Kim H. Tan (2009): Environmental Soil Science. Raymond N. Yong, Masashi Nakano, Roland Pusch (2012) :Environmental Soil Properties and Behavior. CRC press
Supportive References	
Electronic Materials	<a href="https://uoh.blackboard.com">https://uoh.blackboard.com</a> • <a href="http://www.google.com">www.google.com</a> • <a href="http://herbiers.univ-bpclermont.fr/">http://herbiers.univ-bpclermont.fr/</a> • <a href="http://www.cabi.org/">http://www.cabi.org/</a> <a href="http://plantdiversityofsaudi Arabia.info/">http://plantdiversityofsaudi Arabia.info/</a>
Other Learning Materials	

### 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	- Standard classroom equipped with projector and whiteboard - Access to demonstration tables or agricultural lab (if available)
Technology equipment (projector, smart board, software)	- Multimedia projector - Smartboard or large display monitor - Document camera or visualizer for showing plant parts (if available)
Other equipment (depending on the nature of the specialty)	- Preserved Samples of soil

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct: CLOs alignment analysis Indirect: End-of-course student evaluation surveys
Effectiveness of Students assessment	Peer reviewers / Faculty	Direct: Internal review of assessment rubrics and tools for clarity and alignment
Quality of learning resources	Students and Faculty	Indirect: Feedback surveys on textbooks,



Assessment Areas/Issues	Assessor	Assessment Methods
		visuals, and digital materials
The extent to which CLOs have been achieved	Program Advisory Board / External Experts	Indirect: Consultations with local agricultural experts and employers
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

### G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851110214476/195626
DATE	18/2/1447

