



Academic Program Description Form

University Name: University of Mosul

College/Institute: College of Agriculture and Forestry

Scientific Department: Soil Sciences and Water Resources

Academic or Professional Program Name: Ph.D. in Soil Science and Water Resources

Final Certificate Name: Ph. Dr in Soil Science and Water Resources

Academic System: Semesters

Description Preparation Date: 1 / 8 / 2025

File Completion Date:

Signature:

Head of Department Name:

Assist. Prof. Dr. Khaleel Anwer Khaleel

Date: 1 / 8 / 2025

Signature:

Scientific Associate Name:

Prof. Hamed Hmood Ali

Date: / / 2025

The file is checked by: Department of
Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Assist. Lect. Oday Abdulhadi Adday

Quality Assurance Unit Head: Asst. Dr. Ramia Amer Khalil

Date: 3/8/2025

Signature:

Approval of the Dean

Prof. Dr. Dr. Ali Farwoq Almaadhdi



1. Program Vision

a leadership in education and scientific research in soil sciences and water resources, preparing qualified personnel to serve the community, achieve water and agricultural security, and contribute to sustainable development locally and regionally.

2. Program Mission

prepare agricultural engineers specialised in soil Sciences and water Resources, equipped with scientific and ethical competence, and the skills necessary to serve the community, contribute to sustainable development, and meet the needs of the labour market."

3. Program Objectives

1. Preparing agricultural engineers specialised in soil and water sciences, with strong scientific and practical competence.
2. Developing students' abilities in analysis, diagnosis, and practical application through modern technologies.
3. Enhancing skills in self-learning, critical thinking, teamwork, and professional decision-making.
4. Supporting applied scientific research to address soil and water issues and contribute to sustainable development goals.
5. Building scientific competencies in designing and implementing research using sound methodologies and advanced analytical techniques.
6. Qualifying graduates to compete effectively in local, regional, and international labour markets.
7. Strengthening the department's role in community service by offering solutions and consultations for agricultural and environmental challenges.
8. Promoting adherence to professional ethics and relevant agricultural and environmental legislation.
9. Empowering students to utilise Geographic Information Systems (GIS) and digital maps in soil and water-related fields.
10. Raising environmental awareness by emphasising the sustainability of natural resources and biodiversity.
11. Integrating modern technologies in sustainable agriculture and comprehensive soil and water resource management.
12. Developing capabilities in applying organic and clean farming practices while minimising agricultural pollution.
13. Equipping students to tackle environmental challenges such as soil degradation, drought, and salinity through land reclamation initiatives.
14. Improving proficiency in conducting precise analyses of soil, water, and plants using advanced measurement tools.

4. Program accreditation

Do not have

5. Other external influences

√ . Providing sufficient resources and materials to help students achieve greater success in the academic program.

√ . Students' economic situation and their family responsibilities to provide financial support negatively impact their academic performance.

√ . A student's learning proficiency from their secondary or undergraduate studies is one of the most important indicators of excellence in the academic program.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	comments*
Institution Requirements	2	0	0 %	essential
College Requirements	1	1	5.26 %	essential
Department Requirements	25	75	94.74 %	essential
Other			100	

7. Program Courses

Year/ Level	Course Code	Course Name	Theory Hours	Practical Hours	Credits
Preparatory Stage / Level One (2025-2026)	Ag.Co.602	English Language 3	2	0	Complete
	Ag.Co.604	Seminars 2	1	0	1
	Ag.So.701	Advanced Irrigation	2	3	3
	Ag.So.702	Soil fertility and fertilizer 2	2	3	3
	Ag.So.708	Advanced Soil Microbiology 2	2	3	3
	Ag.So.721	Soil Salinity and Reclamation	2	3	3
Preparatory Stage / Level Two (2025-2026)	Ag.Co.703	Computer 3	2	0	Complete
	Ag.Co.701	Seminars 3	1	0	1
	Ag.So.703	Soil Classification Systems	2	3	3
	Ag.So.704	Soil Environmental Chemistry	2	3	3
	Ag.Co.726	Research Methodology 2	2	0	2
	Ag.So.712	Advanced Analytical Chemistry	2	3	3
Preparatory Stage /	Ag.So.720	Advanced Soil Minerals	2	3	3
	Ag.So.705	Soil Colloids	2	3	3
	Ag.So.706	Soil Physiochemistry	2	3	3
	Ag.So.707	Hydroponic Farms	2	3	3

Elective Subjects (2025-2026)	Ag.So.708	Advanced Soil Microbiology 2	2	3	3
	Ag.So.709	Soil Biochemistry	2	3	3
	Ag.So.710	Soil Contamination with heavy Metals	2	3	3
	Ag.So.711	Elements Kinetics in Soil	2	3	3
	Ag.So.712	Advanced Analytical Chemistry	2	3	3
	Ag.So.713	Advanced Soil Physics	2	3	3
	Ag.So.714	Advanced Water Requirements	2	3	3
	Ag.So.715	Micronutrients	2	3	3
	Ag.So.716	Advanced Plant Physiology	2	3	3
	Ag.So.717	Microbiological Environment	2	3	3
	Ag.So.718	Soil Microbial Physiology	2	3	3
	Ag.So.719	Microbiology Genetics	2	3	3
	Ag.So.720	Advanced Soil Mineral	2	3	3
	Ag.So.721	Salinity and Soil Reclamation	2	3	3
	Ag.So.722	Advanced Drainage	2	3	3
	Ag.So.723	Land Degradation	2	3	3
	Ag.So.724	Soil Management	2	3	3
	Ag.So.725	Land Geomorphology	2	3	3

8 . Expected learning outcomes of the program	
Code	Knowledge and Understanding
A6	The student should explain the environmental and agricultural legislation related to the use of natural resources.
A 7	The student should demonstrate an understanding of the concepts of biodiversity and its role in the sustainability of agricultural resources.
A 8	The student should be able to distinguish between traditional and sustainable farming systems and evaluate their impact on soil and water.
Code	Mental (intellectual) skills
B5	The student should design applied research using the scientific method and statistical analysis techniques.
B6	The student should plan to manage effective agricultural projects in the areas of land, water, and environment.
B7	Students should analyze environmental and agricultural data to reach conclusions that serve development goals.
Code	Behaviors and values
E4	Students should contribute to spreading environmental awareness among farmers and the community about the sustainable use of soil and water.
E5	Students should demonstrate a commitment to continuous learning and updating their knowledge and skills in a way that serves their profession

	and community.
E6	The student should be able to evaluate the ethical and environmental problems associated with the use of agricultural resources using critical thinking.

9. Teaching and Learning Strategies

- ✓ **Problem-Based Learning (PBL):** Training students to analyse real-world problems and propose scientific solutions.
- ✓ **Practical and Field Training:** Applying concepts in laboratory and field settings using modern technologies.
- ✓ **Collaborative Learning:** Completing group projects to develop teamwork and decision-making skills.
- ✓ **Flipped Classroom:** Studying course material in advance and dedicating class time to discussion and practical application.

10. Evaluation methods

- ✓ **Short Analytical Tests:** Assessing deep understanding of theoretical concepts and their connection to agricultural applications.
- ✓ **Applied Projects and Reports:** Evaluating the student's ability to analyse problems and implement practical field-based solutions.
- ✓ **Practical Examinations in the Laboratory or Field:** Measuring proficiency in using tools and performing technical procedures.
- ✓ **Observation Using Behavioural Assessment Rubrics:** Monitoring professional commitment, teamwork, collaboration, and environmental awareness.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor		nothing			nothing	
Assistant professor		6			6	
Lecturer		7			7	
Assistant Lecturer		9			9	

12. Professional Development

Mentoring new faculty members

- ✓ The professional development mechanism for academic staff relies on conducting regular workshops and training sessions on modern teaching methods, student assessment, and course design based on learning outcomes, in coordination with centres for continuing education and quality assurance. Participation in accredited educational conferences is encouraged, with regular follow-up through practical implementation reports.
- ✓ The proposed teaching and learning strategy is blended project-based learning, which combines online and face-to-face instruction through real-life projects that enhance understanding, application, and critical thinking.
- ✓ The proposed student assessment strategy is task-based continuous formative assessment, using reports, case studies, and analytical presentations evaluated through clear rubrics and supported by constructive feedback.

Professional development of faculty members

- ✓ Developing educational skills through diversifying teaching methods, dealing positively with and practicing feedback. Using educational techniques and focusing on developing intellectual and competitive skills among students.
- ✓ Developing skills to address problems and phenomena affecting the course of the educational process in the college.
- ✓ Developing the ability to evaluate courses and plans in coordination with academic departments to ensure their achievement to labor, market requirements.
- ✓ Developing the ability to measure the satisfaction of beneficiaries (faculty members, students, and society) with the education process and researcher at the college
- ✓ Evaluating tests in order to evaluating students and papering reports to following up on their results.

13. Acceptance Criterion

- ✓ Students are accepted into the college program central admissions department at the Ministry of High education and scientific research, and according to the application channels approved by the ministry.
- ✓ Students are distributed to the department program according to the grade and the students desire.

- ✓ The students accept in the department must fit the physical appearance and health based on the medical examination reports
- ✓ The students grade accept is based on the minimum grade approved by the ministry

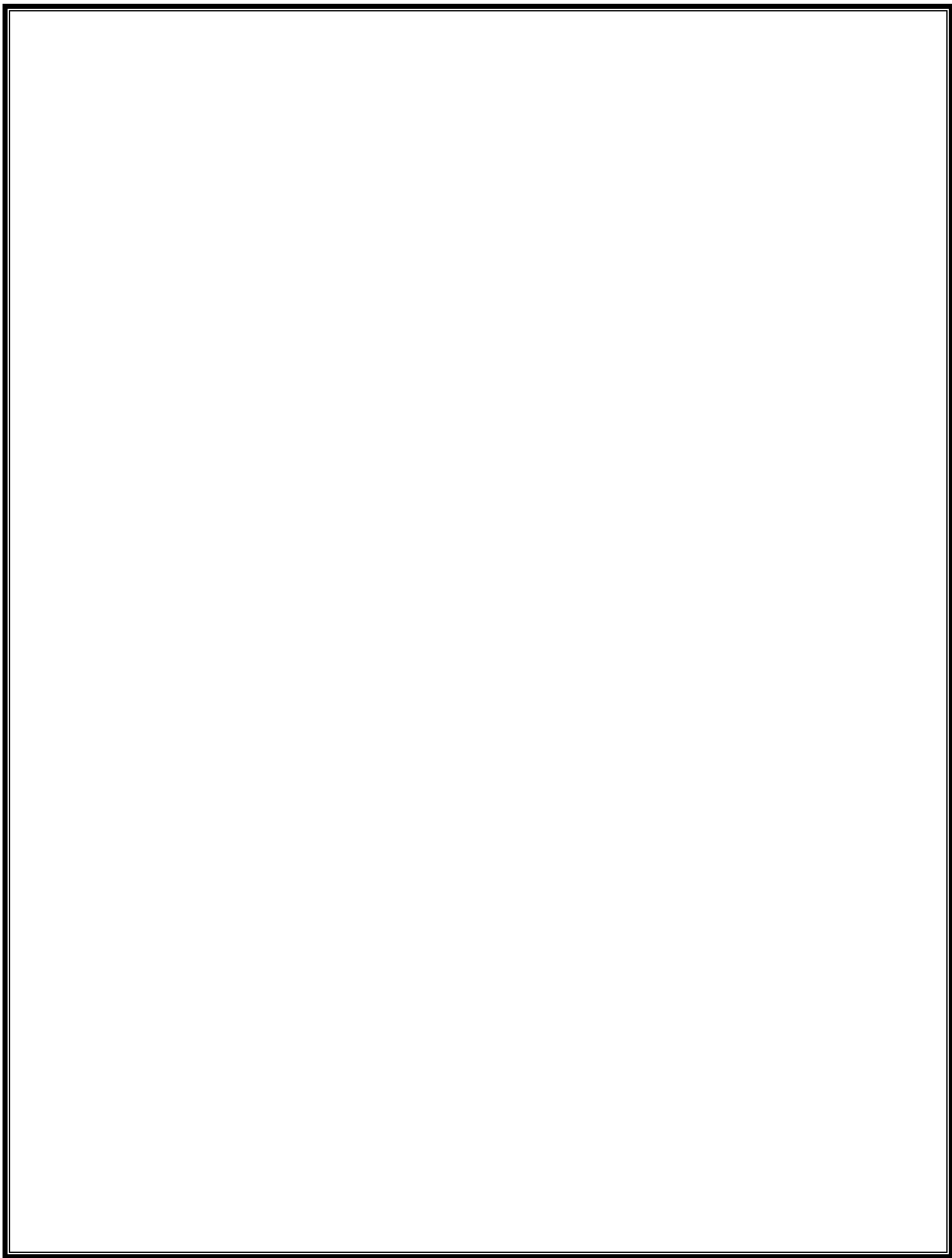
14. The most important sources of information about the program

- ✓ The primary source of program information is the committee of experts of departments of soil and water resources which are approve by scientific committee of the deans of college of agriculture.
- ✓ The study prepared by the scientific committee, department council and approved by the college council which includes a proposal for modernizing academic agricultural program with simulating the three top equivalent departments around the world.
- ✓ -local and regional market needs

15. Program Development Plan

A plan was put to develop the program after studying the review notes by the lecturer's members and quality assurance committee, the scientific committee in the department council and the student's feedback through analyzing the results of the student's questionnaires for the courses based on evaluating of exams results for all academic programs, as follows:

- ✓ Inadequate practical training
- ✓ The lack of a clear mechanism to help weak students and encouraging outstanding students
- ✓ The students don't understand the university regulations governing the educational processing
- ✓ the succession rate of some courses don't agree with the normal distribution chart.



Program Skills Outline													
Required program Learning outcomes													
Year/Level 2025 - 2026	Course Code	Course Name	Basic or optional	Knowledge			Skills			Valuable			
				A4	A5	A6	B1	B4	B5	E3	E4	E5	E7
Preparatory Stage / Level One	Ag.Co.602	English Language 2						●			●		
	Ag.Co.604	Seminars 1			●	●	●		●	●		●	
	Ag.So.701	Soil Genesis and Classification		●				●					
	Ag.So.702	Soil Chemistry and Mineralogy						●	●				
	Ag.So.708	Advanced Design and Analysis Experiments				●	●		●			●	●
	Ag.So.721	Soil Pollution		●			●			●	●		●
Preparatory Stage / Level Two	Ag.Co.703	Computer 2		●		●		●					
	Ag.Co.701	Research Methodology 1				●							
	Ag.So.703	Advanced Soil Physics			●	●	●		●	●		●	
	Ag.So.704	Soil Fertility and Fertilizers 1		●				●					
	Ag.Co.726	Soil Conservation				●	●		●			●	●
	Ag.So.712	Advanced Soil Salinity			●				●		●		
Preparatory Stage / Elective Subjects	Ag.So.720	Advanced Soil Minerals		●			●						
	Ag.So.705	Soil Colloids		●		●	●		●	●			
	Ag.So.706	Soil Physiochemistry				●	●		●			●	●
	Ag.So.707	Hydroponic Farms					●						
	Ag.So.708	Advanced Soil Microbiology 2			●				●		●		
	Ag.So.709	Soil Biochemistry				●	●		●			●	●
	Ag.So.710	Soil Contamination with heavy Metals				●						●	
	Ag.So.711	Elements Kinetics in Soil					●					●	
	Ag.So.712	Advanced Analytical Chemistry			●	●	●		●	●	●	●	
	Ag.So.713	Advanced Soil Physics					●		●	●		●	
	Ag.So.714	Advanced Water Requirements					●		●	●		●	
	Ag.So.715	Micronutrients					●		●	●		●	
	Ag.So.716	Advanced Plant Physiology					●		●	●		●	
	Ag.So.717	Microbiological Environment					●		●	●		●	
	Ag.So.718	Soil Microbial Physiology		●			●			●		●	
	Ag.So.719	Microbiology Genetics							●				
	Ag.So.720	Advanced Soil Mineral				●					●		
	Ag.So.721	Salinity and Soil Reclamation		●			●			●	●		●
	Ag.So.722	Advanced Drainage		●			●			●	●		●
	Ag.So.723	Land Degradation		●			●			●	●		●
	Ag.So.724	Soil Management		●			●			●	●		●
	Ag.So.725	Land Geomorphology		●			●			●	●		●