Academic Program Description Form

University Name: Mosul University

Faculty/Institute: College of Agriculture and Forestry

Scientific Department: Soil Sciences and Water Resources

Academic or Professional Program Name: Soil Sciences and Water Resources

Final Certificate Name: Soil Sciences and Water Resources B.Sc.

Academic System: Semesters

Description Preparation Date: 30/4/2025

File Completion Date: 30/4/2025

Signature:

Head of Department Name:
Assist. Prof. Dr. Khaled Anwer Khaled
Date: 30/4/2025

أ.د.علي فاروق المفاضيدي
معاون العميد للشؤون العلمية

Signature:

Scientific Associate Name:
Prof.
Date:

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:
Signature:

Approval of the Dean
Prof. Dr. Dr. Ali Farwooq Almaadhdi
عميد كلية الزراعة والغابات

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
Program Accreditation Submitted

5. Other external influences
√ Family problems that face the students negatively affects the students' performance in the academic program. √ Extracurricular activity helps students to achieve greater achievements in applying the academic program. √ The economic situation of the students and their connection to work in order to collect money has negatively affected their academic performance. √ The student's learning efficiency from his secondary school studies is one of the most important indicators of excellent in the performance of the academic program.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	comments*
Institution Requirements	7	12	9.56%	essential
College Requirements	9	10.5	8.36%	essential
Department Requirements	31	103	82.07%	essential
Summer Training	1	Compliant or not		
Other			100	

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours		
			theoretical	practical	Unit
First stage /Second semester (2023-2024)	UOM1031	COMPUTER	--	3	3
	UOM1040	DEMOCRACY and HUMAN RIGHTS	2	--	2

	UOM1021	ENGLISH LANGUAGE	2	--	2
	MAT1010	MATHEMATICS	2	2	7
	ACE1020	AGRICULTURE CAREER ETHICS	2	--	5
	END1030	ENGINEERING DRAWING	1	3	6
	AET1040	AGRICULTRAL ENGINEERING TECHNIQUES TRANSFER	2	2	5
First stage /Second semester (2023-2024)	UOM1011	ARABIC LANGUAGE	2	--	2
	BSS1050	BIOSAFETY and SECURITY	1	2	3
	AGS1060	AGRICULTURAL STATISTICS	2	3	55
	BIO1070	BIODIVERSITY	2	2	5
	AGI1080	AGRICULTURAL INFORMATICS	2	1	5
	SUD1090	SUSTANIBLE DEVELOPMENT	2	--	5
	AMT1100	AGRICULTURAL MARKETING TECHNIQUES	2	--	5
Second stage /Autumn semester (2024-2025)			theoretical	practical	Unit
	BICH204	Biochemistry	2	3	3.5
	PRSS113	Principles of Soil Science	2	3	3.5
	STAT109	Statistical	2	3	3.5
	PRMB205	Principles of Microbiology	2	3	3.5
	SWEN234	Soil and weather environment	2	3	2.5
	VEPR121	Vegetable Production	1	3	2.5
	COMA203	Computer Application 2	--	3	1.5
	ARAL10	Arabic Language 1	2		2
	CBAP200	Crimes of the defunct Baath Party	2	---	2
Second stage /spring semester (2024-2025)	PSWA235	Plant Soil and Water Analysis	2	3	3.5
	PRPP117	Principles of Plant Protection	2	3	3.5
	AGME207	Agricultural machines and Equipments	2	3	2.5
	PAEX206	Principles of agricultural extension	2	---	2
	PLPH210	Plant Physiology	2	3	3.5
	ALLA236	Alteration and Leveling of land	2	3	3.5
	ENGL201	English Language 2	2		2
Third stage /Autumn semester (2024-2025)	SOPH346	Soil Physics	2	3	3.5
	ORMS347	Organic Matter in Soil	2	3	3.5
	SOFE348	Soil Fertility	2	3	3.5
	IRIG349	Irrigation	2	3	3.5
	SOCH350	Soil Chemistry	2	3	3.5
	SOPW351	Soil and water Pollution	2	3	3.5
	DAAE302	Design and analysis of agricultural experiments	2	3	3.5
	ENGL300	English Language 3	2	--	2
Third stage /spring semester (2024-2025)	RESE352	Remote Sensing	2	3	3.5
	SSAL353	Soil salinity	2	3	3.5
	SMOR354	Soil Morphology	2	3	3.5
	DRAI355	Drainage	2	3	3.5
	SOMI356	Soil Mineralogy	2	3	3.5
	ECER357	Economics and natural Resources	3	--	3
	COMA301	Computer Application 3	---	3	1.5
Fourth stage	SUSC448	Soil Survey and Classification	2	3	3.5
	SOWC449	Soil and Water Conservation	2	3	3.5
	SOMI450	Soil Microbiology	2	3	3.5

/Autumn semester (2024-2025)	SWPR451	Soil-water - Plant Relation	2	3	3.5
	HYWR452	Hydrology and water Resources	2	3	3.5
	IRST453	Irrigation systems Technology	2	3	3.5
	REPR402	Research Project 1	--	3	1.5
	COMA401	Computer Application 4	-----	3	1.5
	SEMN404	Seminar			
Fourth stage /spring semester (2024-2025)	SOMA454	Soil Management	2	3	3.5
	DESE455	Desertification	2	---	2
	PLNU214	plant nutrition	2	3	3.5
	FETE456	Fertilizers Technology	2	3	3.5
	LARE457	Lands Reclamation	2	3	3.5
	REPR403	Research Project 2	------	3	1.5
	ENGL400	English Language 4	2	-----	2
	SEMN404	Seminar	1		1

8. Expected learning outcomes of the program

Knowledge and Understanding	Code
Demonstrate an understanding of the fundamental concepts of soil and water sciences and their applications in sustainable agricultural development.	A1
Explain the scientific principles of soil and water management and the improvement of their physical and chemical properties.	A2
Identify the impact of environmental and human factors on soil and water, along with appropriate mitigation methods.	A3
Recognise the latest technologies and innovations used in soil and water analysis.	A4
Interpret the principles of designing irrigation and drainage networks and planning the use of agricultural land.	A5
Explain environmental and agricultural regulations related to the use of natural resources.	A6
Demonstrate an understanding of biodiversity concepts and their role in sustaining agricultural resources.	A7
Differentiate between traditional and sustainable farming systems and evaluate their impact on soil and water.	A8
Skills	
Mental (intellectual) skills	**Code**
Diagnose agricultural problems related to soil and water and propose scientific solutions.	B1
Use laboratory and field instruments and techniques efficiently to analyse soil and water.	B2

Apply skills in designing and implementing irrigation and drainage systems according to sustainability standards.	B3
Utilise Geographic Information Systems (GIS) in the assessment and mapping of natural resources.	B4
Design applied research using the scientific method and statistical analysis techniques.	B5
Plan effective agricultural projects in the fields of land, water, and environmental management.	B6
Analyse environmental and agricultural data to draw conclusions that support development goals.	B7
Present scientific ideas clearly and objectively in specialised reports and projects.	B8
Demonstrate proficiency in using applied software for soil and water data analysis and environmental modelling.	B9

Ethics	
Behaviors and values	**code**
Adhere to professional ethics in all work activities and field research.	E1
Demonstrate a sense of individual and social responsibility in the conservation of natural resources.	E2
Work effectively within multidisciplinary teams, showing cooperation and mutual respect.	E3
Contribute to raising environmental awareness among farmers and the community regarding the sustainable use of soil and water.	E4
Exhibit a commitment to continuous learning and updating knowledge and skills in service of the profession and society.	E5
Evaluate ethical and environmental issues related to the use of agricultural resources through critical thinking.	E6

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	

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.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

- 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

13. The most important sources of information about the program

State briefly the sources of information about the program.

The most important source 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.

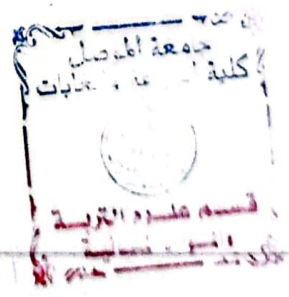
- The study prepared by the scientific committee, department council and approved by the college council which includes a proposal for modernizing academic agricultural program with simulating the three top equivalent departments around the world.

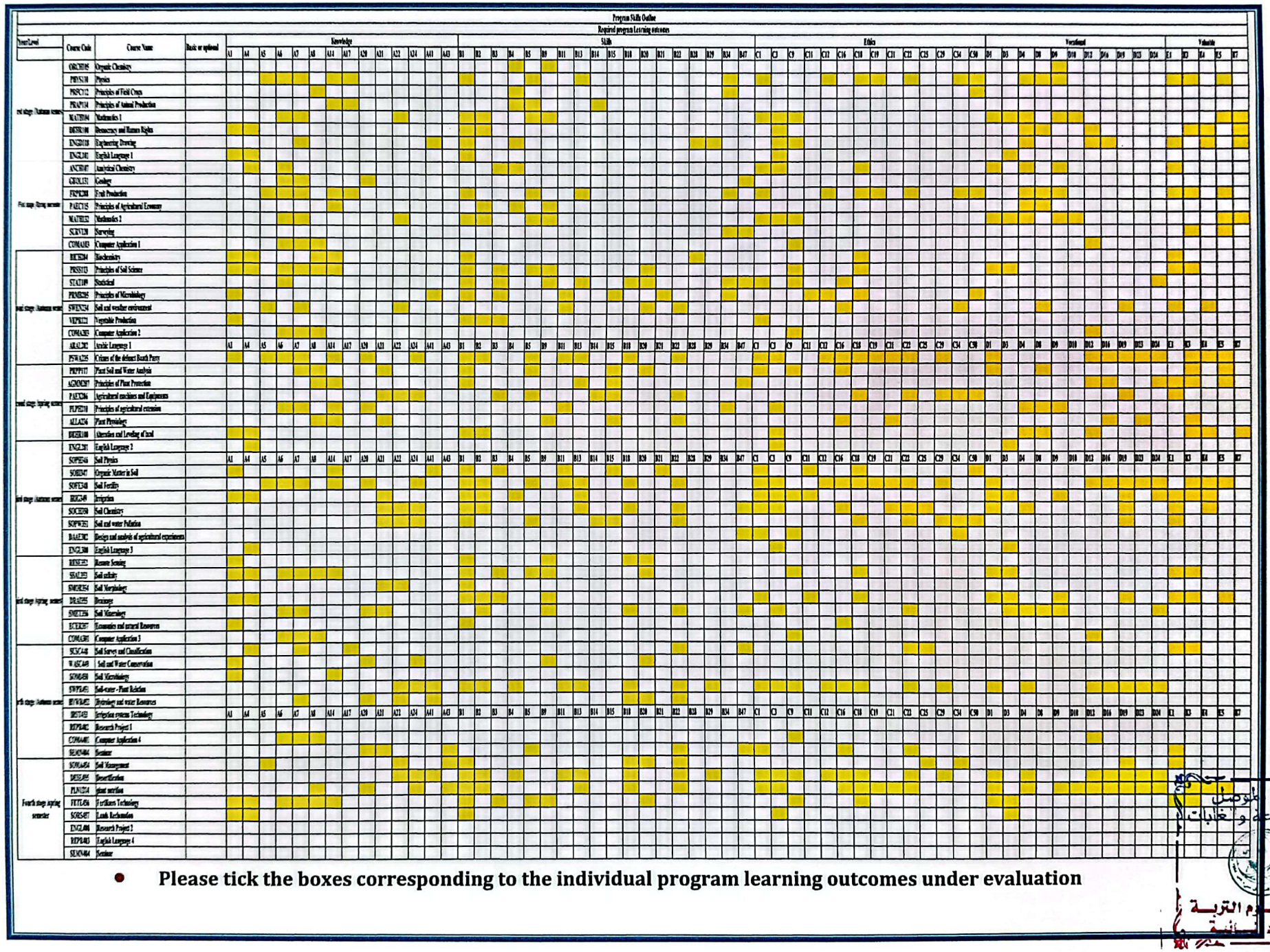
-local and regional market needs

14.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.





- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation**