Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2025

1-Program vision
The department aspires to continue enriching and enhancing the department's outputs that are compatible with the changes occurring in the agricultural climate environment, in order to build knowledge at the objective and agricultural levels to confront these changes .according to a well-thought-out plan

2- Program message
The department's mission is to continue completing the tasks of modern cognitive axes and directing their objectives and outputs to solve the rapid changes in soil degradation, climate change, desertification, and environmental pollution, to find solutions in coordination with .relevant sectors to encourage them to invest in scientific outputs

3- Program objectives .
The department aims to focus on developing the research and scientific skills of the department's students through graduation research projects, and to expand the focus of using geospatial and space technologies in surveying and evaluating soil and water resources, monitoring the agricultural environment and desertification, and transferring these experiences and information to the relevant sectors and participating in developing strategic solutions to the problems of water resources, environmental pollution and the risks of desertification**.**

4- Program accreditation .
Seeking accreditation

5- Other external influences .
Opportunities for support

Program structure .6

*comments	percentage%	Study unit	Number of	Program
essential	15.79	15.5	9	**Institutional**
essential	22.81	53	13	**College**
major	61.40	124	35	**Department**
essential	**----**	**---**	**1**	**Summer**
				Other

.Notes may include whether the course is core or optional *

7- Program Description .				
Credit hours		Course name	Course code	Year/Level
practical	theoretical			
	2	Democracy and human	UOB102	First stage, first semester
3	2	field crops	FICR115	
3	2	Analytical Chemistry	ACHM121	
3	2	geologic	GEOL113	
	2	mathematics	MATH111	
	2	English 1	UOB102	
	2	Arabic language 1	UOB104	First stage, semester second
3	2	Organic Chemistry	OCHM125	
3	2	Physics	GPHY120	
3	2	Soil science	SOIL114	
3	2	Computer Basics	UOB103	
3	1	flat area	PLSU118	
3	2	biochemistry	BICH230	stage The , chapter second the first
3	2	Soil principles	SOIL214	
3	2	Principles of Statistics	STAT224	
3	2	Principles of	MICB218	
3	2	Environment and	EWCO212	
3	1	Vegetable production	VGPR236	
	2	Computer / 2	COMP202	
	2	English language / 2	ENGL206	
	2	Baath regime crimes in	BACR205	
3	2	Soil, water and plant	SWPA215	stage The chapter second
3	2	Plant protection	PLPR222	
3	2	Agricultural machinery	AGEQ232	

	2	Agricultural guidance	AGEX213	
3	2	Plant physiology	PLPH220	
3	2	Land settlement and modification	LALV228	
3	2	Soil Physics	SPHY338	stage The third the ,chapter first chapter
3	2	organic matter in soil	SORM312	
3	2	soil fertility	SOFE311	
3	2	soil chemistry	SOCH313	
3	2	soil and water pollution	SWPO314	
3	2	Design and analysis of	DAEX327	
3	2	remote sensing	RESE315	stage The third the ,chapter second
3	2	soil salinity	SSAL316	
3	2	soil morphology	SMOR317	
3	2	irrigation	IRRQ318	
3	2	puncture	DRAN319	
3	2	soil minerals	SMIN320	
	2	Natural Resource	RECO321	
3	2	Soil survey and	SSCL412	stage , Fourth first semester
3	2	Soil maintenance	SWCO413	
3	2	Microscopic soil revival	SMIC414	
3	2	The relationship	SWPR415	
3	2	Hydrology and Water	HWRE417	
3	2	Irrigation systems	IRTE418	
3		Graduation Research	GRPR421	
3	2	Soil management	SMAN419	stage , Fourth semester second
	2	desertification	DESE420	
3	2	Plant nutrition	PLNU426	
3	2	Fertilizer technologies	FETE424	
3	2	land reclamation	LARE416	
	1	seminars	SEMN423	

3		Graduation Research	GRPR422	

Knowledge

Expected learning outcomes of the program .8	
knowledge	
• Lectures, seminars and discussion panels • Daily tests • monthly tests • Final exams • Homework • Agricultural experiment design • Reports • Research	A.1 The student has a solid knowledge of basic sciences and applied agricultural sciences related to soil and water resources. A.2 The student understands the basic concepts of soil science and water resources with the ability to relate them to the agricultural environment. A.3 The student understands the principles of managing natural resources (soil and water) in a sustainable manner, with knowledge of irrigation and drainage techniques , and soil, water, and plant analysis. And the application of the principles of reclamation and combating desertification. A.4 The student masters the use of modern concepts and techniques such as remote sensing , data analysis, and agricultural modeling to improve productivity and resource efficiency. A.5 The student understands the impact of climatic and environmental factors on agricultural systems and understands the importance of reducing pollution and preserving biodiversity to ensure resource sustainability. A.6 The student has a comprehensive understanding of agricultural terminology used in the labor market and realizes the importance of recycling agricultural waste to enhance the agricultural economy. A.7 The student understands the interrelationship between soil, . water and plants and their impact on agricultural production
Skills	

• Teaching students how to engage in objective thinking and analysis methods • Providing students with course basics and additional topics • Ask intellectual questions that require different points of view as .homework • Reports from the institutions where the student performs field or . applied training • Employer reports on program .graduates • Field supervisor's opinion • Applied project • Takes responsibility at work • Proposes solutions based on scientific data • Considers community aspects in agricultural solutions	B1 The student employs basic and applied knowledge to analyze agricultural problems related to soil and water and to use scientific methods to find sustainable solutions. B2 The student is proficient in designing and implementing agricultural experiments and analyzing data using statistical software and modern techniques such as remote sensing and geographic information systems. B3 The student demonstrates the ability to evaluate the impact of pollution and water scarcity on agricultural production and propose practical plans for the reclamation and conservation of natural resources. B4 The student acquires critical and creative thinking skills to devise new solutions to agricultural challenges, with the ability to make informed decisions based on scientific analysis. B5 The student practices practical skills in examining and analyzing soil, water and plant samples, diagnosing field problems and recommending appropriate treatments. B6 The student masters the use of computer programs and information technology in agricultural project management and data analysis. Preparing technical reports.
values	

• Reports from the institutions where the student performs . field or applied training • Employer reports on program .graduates • Field supervisor's opinion • Applied project • Takes responsibility at work • Proposes solutions based on scientific data • Considers community aspects in agricultural solutions	**C1** The student demonstrates a sense of responsibility and professional discipline in dealing with natural resource issues and is keen on their sustainable use to serve society. **C2** The student demonstrates a commitment to agricultural professional ethics and respect for laws and human rights. Taking into account the values of integrity and transparency in scientific and practical practice. **C3** The student works as a team and participates effectively in group work, promoting a culture of cooperation and altruism to achieve common goals. **C4** The student embraces the values of creativity and initiative in facing agricultural and environmental challenges and demonstrates enthusiasm for implementing innovative solutions to serve agriculture and society. **C5** The student perseveres in learning and continuous self-development and demonstrates a commitment to seriousness and diligence to achieve his academic and professional goals.

Teaching and learning strategies .9
.Teaching students how to use objective thinking and analysis methods - .Providing students with the basics of the course and additional topics - .Ask intellectual questions that require different points of view as homework -

Evaluation methods .10
Midterm exams - Monthly tests - Daily tests- Homework - Graduation research discussion tests -

Faculty .11
Faculty members

Faculty preparation		Requirements/Special Skills (If any)		Specialization		Academic rank
lectur	ange			private	general	
	3			Soil fertility and fertilization	Soil Science and Water Resources	Mr
	3			Soil fertility and fertilization	Soil Science and Water Resources	assistant professor
	3			soil chemistry	Soil Science and Water Resources	Mr
	1			soil chemistry	Soil Science and Water Resources	assistant professor
	2			soil chemistry	Soil Science and Water Resources	teacher
	1			Soil management	Soil Science and Water Resources	Mr
	1			Soil management	Soil Science and Water Resources	assistant professor
	1			Soil survey and classification	Soil Science and Water Resources	Mr
	1			Soil survey and classification	Soil Science and Water Resources	assistant professor
	2			Microscopic soil regeneration	Soil Science and Water Resources	assistant professor
	1			Microscopic soil regeneration	Soil Science and Water Resources	teacher
	1			Soil and water maintenance	Soil Science and Water Resources	assistant professor
	1			Soil maintenance and water management	Soil Science and Water Resources	teacher

	1			Soil Physics	Soil Science and Water Resources	assistant professor
	1			land reclamation	Soil Science and Water Resources	assistant professor
	1			soil morphology	Soil Science and Water Resources	teacher
	1			Water Engineering	Civil Engineering	teacher
	1			soil salinity	Soil Science and Water Resources	teacher
	4			Soil Science and Water Resources	Soil Science and Water Resources	Assistant Professor
1				Field irrigation	Soil Science and Water Resources	Professor (Experienced)
1				date	College of Education	teacher
1				Arabic language	College of Education	teacher
1				mathematics	Mathematics	Assistant Professor
1				Organic Chemistry	Food Sciences	assistant professor
1				Organic Chemistry	Food Sciences	Assistant Professor
1				Fruit production	Horticulture and landscaping	Mr
1				Fruit production	Horticulture and landscaping	assistant professor
1				agricultural economy	Administration and Economics	assistant professor
1				Plant protection	Plant protection	assistant professor
1				Plant protection	Plant protection	Assistant Professor
1				Agricultural machinery and equipment	Agricultural machinery and equipment	teacher

1				Agricultural machinery and equipment	Agricultural machinery and equipment	Assistant Professor
1				Agricultural guidance	field crops	assistant professor
1				Physiology of a plant	Horticulture and landscaping	assistant professor
1				Physiology of a plant	Horticulture and landscaping	teacher
1				Horticulture and landscaping	Horticulture and landscaping	assistant professor
1				Horticulture and landscaping	Horticulture and landscaping	assistant professor
1				biochemistry	Livestock	assistant professor

Professional development
Orientation of new faculty members
Encourage new teachers to participate in the development courses held by the university and college, as well as to participate in practical lessons as listeners, to learn from senior and dealing with students , teachers teaching methods, classroom management.
Professional development for faculty members
Directing faculty members to participate in conferences, workshops and seminars, especially international ones, in addition to emphasizing their involvement in development courses held by the university and college to increase their knowledge of modern learning

Acceptance Criteria .12
Admission is centralized after graduating from the sixth scientific and applied year and choosing the College of Agriculture and then competing for the departments according to . the average and then registering in the department

The most important sources of information about the program .13

Specialized scientific books -1 **-2** Academic research **-3** The World Wide Web **-4** The accumulated scientific experience of the department's staff **-5** Feedback from the labor market

Program Development Plan .14
Addressing weaknesses that may appear during the implementation of academic programs

Program Skills Map														
Required learning outcomes of the program														
knowledge											Essential or ?optional	Course name	Course code	Year/Level
A.11	**A.10**	**A.9**	**A.8**	**A.7**	**A.6**	**A.5**	**A.4**	**A.3**	**A.2**	**A.1**				
											essential	Democracy and	UOB102	First stage, first semester
							√	√	√	√	essential	field crops	FICR115	
							√	√	√	√	essential	Analytical	ACHM121	
					√	√	√	√	√	√	essential	geologic	GEOL113	
			√	√	√	√	√				essential	mathematics	MATH111	
					√	√	√				essential	English 1	UOB102	
					√	√	√				essential	Arabic language 1	UOB104	First stage, second semester
							√	√	√	√	essential	Organic	OCHM125	
					√	√	√				essential	Physics	GPHY120	
	√	√	√	√	√	√	√	√	√	√	essential	Soil science	SOIL114	
					√	√	√				essential	Computer Basics	UOB103	
	√	√	√	√	√	√	√	√	√		essential	flat area	PLSU118	

Program Skills Map													
Required learning outcomes of the program													
The skill										Essential or ?optional	Course name	Course code	Year/Level
B10	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**				
										essential	Democracy and	UOB102	First stage, first semester
				√	√	√	√			essential	field crops	FICR115	
				√	√	√	√			essential	Analytical	ACHM121	
				√	√	√	√			essential	geologic	GEOL113	
		√	√	√	√	√	√			essential	mathematics	MATH111	
				√	√	√	√			essential	English 1	UOB102	
		√	√	√						essential	Arabic language 1	UOB104	First stage, second semester
				√	√	√	√			essential	Organic	OCHM125	
				√	√	√	√			essential	Physics	GPHY120	
	√	√	√	√	√	√	√	√	√	essential	Soil science	SOIL114	
			√	√	√	√				essential	Computer Basics	UOB103	
		√	√	√	√	√	√	√	√	essential	flat area	PLSU118	

Program Skills Map												
Required learning outcomes of the program												
values									Essential or ?optional	Course name	Course code	Year/Level
				C5	**C4**	**C3**	**C2**	**C1**				
				√	√	√	√	√	essential	Democracy and	UOB102	First stage, first semester
						√	√	√	essential	field crops	FICR115	
						√	√	√	essential	Analytical	ACHM121	
						√	√	√	essential	geologic	GEOL113	
						√	√	√	essential	mathematics	MATH111	
						√	√	√	essential	English 1	UOB102	
						√	√	√	essential	Arabic language 1	UOB104	First stage, second semester
						√	√	√	essential	Organic	OCHM125	
						√	√	√	essential	Physics	GPHY120	
						√	√	√	essential	Soil science	SOIL114	
						√	√	√	essential	Computer Basics	UOB103	
						√	√	√	essential	flat area	PLSU118	

Program Skills Map														
Required learning outcomes of the program														
knowledge											Essential or ?optional	Course name	Course code	Year/Level
A.11	**A.10**	**A.9**	**A.8**	**A.7**	**A.6**	**A.5**	**A.4**	**A.3**	**A.2**	**A.1**				
					√	√	√	√	√	√	essential	biochemistry	BICH230	Second stage , first semester
					√	√	√	√	√	√	essential	Soil principles	SOIL214	
					√	√	√	√	√	√	essential	Principles of	STAT224	
		√	√	√	√	√	√	√			essential	Principles of	MICB218	
		√	√	√	√	√	√	√			essential	Environment and	EWCO212	
		√	√	√	√	√	√	√			essential	Vegetable	VGPR236	
					√	√	√	√	√		essential	Computer / 2	COMP202	
			√	√	√	√	√				essential	English Language	ENGL206	
											essential	Baath regime	BACR205	
	√	√	√	√	√	√	√	√	√	√	essential	Soil, water and	SWPA215	Second , stage second semester
				√	√	√	√	√			essential	Plant protection	PLPR222	
					√	√	√	√	√		essential	Agricultural	AGEQ232	
			√	√	√	√	√				essential	Agricultural	AGEX213	

				√	√	√	√	√			essential	Plant physiology	PLPH220	
				√	√	√	√	√	√		essential	Land settlement	LALV228	
				√	√	√	√	√			essential	Computer / 2	COMP203	

Program Skills Map														
Required learning outcomes of the program														
Skills											Essential or ?optional	Course name	Course code	Year/Level
	B10	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**				
						√	√	√			essential	biochemistry	BICH230	Second stage , first semester
		√	√	√	√	√	√	√	√		essential	Soil principles	SOIL214	
				√	√	√	√				essential	Principles of	STAT224	
		√	√	√	√	√	√	√	√		essential	Principles of	MICB218	
						√	√	√			essential	Environment and	EWCO212	
				√	√	√	√				essential	Vegetable	VGPR236	
					√	√	√	√	√		essential	Computer / 2	COMP202	
			√	√	√	√	√	√	√		essential	English Language	ENGL206	
											essential	Baath regime	BACR205	
	√	√	√	√	√	√	√	√	√	√	essential	Soil, water and	SWPA215	

					√	√	√	√	√		essential	Plant protection	PLPR222	Second , stage second semester
				√	√	√	√	√			essential	Agricultural	AGEQ232	
									√		essential	Agricultural	AGEX213	
						√	√	√	√		essential	Plant physiology	PLPH220	
					√	√	√	√	√	√	essential	Land settlement	LALV228	
					√	√	√				essential	Computer / 2	COMP203	

Program Skills Map														
Required learning outcomes of the program														
The values											Essential or ?optional	Course name	Course code	Year/Level
						C5	**C4**	**C3**	**C2**	**C1**				
										√	essential	biochemistry	BICH230	Second stage , first semester
								√	√		essential	Soil principles	SOIL214	
									√		essential	Principles of	STAT224	
											essential	Principles of	MICB218	
										√	essential	Environment and	EWCO212	
										√	essential	Vegetable	VGPR236	
										√	essential	Computer / 2	COMP202	

										√	essential	English Language	ENGL206		
										√	essential	Baath regime	BACR205		
										√	essential	Soil, water and	SWPA215	Second , stage second semester	
										√	essential	Plant protection	PLPR222		
										√	essential	Agricultural	AGEQ232		
										√	essential	Agricultural	AGEX213		
										√	essential	Plant physiology	PLPH220		
										√	essential	Land settlement	LALV228		
										√	essential	Computer / 2	COMP203		

Program Skills Map														
Required learning outcomes of the program														
knowledge												Essential or ?optional	Course name	Course code	Year/Level
	A.11	**A.10**	**A.9**	**A.8**	**A.7**	**A.6**	**A.5**	**A.4**	**A.3**	**A.2**	**A.1**				
				√	√	√	√	√	√	√	√	essential	Soil Physics	SPHY338	

		√	√	√	√	√						essential	organic matter in soil	SORM312	Stage Three, First Semester
		√	√	√	√	√						essential	soil fertility	SOFE311	
		√	√	√	√	√						essential	soil chemistry	SOCH313	
					√	√	√	√				essential	soil and water	SWPO314	
							√	√	√			essential	Design and	DAEX327	
					√	√	√	√	√			essential	remote sensing	RESE315	Stage Three, Second Semester
					√	√	√	√	√			essential	soil salinity	SSAL316	
					√	√	√	√	√			essential	soil morphology	SMOR317	
							√	√	√	√	√	essential	irrigation	IRRQ318	
							√	√	√	√	√	essential	puncture	DRAN319	
		√	√	√	√	√	√					essential	soil minerals	SMIN320	
							√	√				essential	Natural Resource Economics	RECO321	

Program Skills Map															
Required learning outcomes of the program															
The skill												Essential or ?optional	Course name	Course code	Year/Level
		B10	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**				
				√	√	√	√	√	√	√		essential	Soil Physics	SPHY338	Stage Three, First Semester
		√	√	√	√	√	√					essential	organic matter in soil	SORM312	
			√	√	√	√	√					essential	soil fertility	SOFE311	
			√	√	√	√	√					essential	soil chemistry	SOCH313	
			√	√	√	√	√					essential	soil and water	SWPO314	
						√	√	√	√			essential	Design and	DAEX327	
						√	√	√	√			essential	remote sensing	RESE315	Stage Three, Second Semester
			√	√	√	√	√					essential	soil salinity	SSAL316	
								√	√	√	√	essential	soil morphology	SMOR317	
							√	√	√	√	√	essential	irrigation	IRRQ318	
							√	√	√	√	√	essential	puncture	DRAN319	
			√	√	√	√	√					essential	soil minerals	SMIN320	

							√	√	√	√		essential	Natural Resource Economics	RECO321	

Program Skills Map															
Required learning outcomes of the program															
knowledge												Essential or ?optional	Course name	Course code	Year/Level
							C5	**C4**	**C3**	**C2**	**C1**				
											√	essential	Soil Physics	SPHY338	Stage Three, First Semester
											√	essential	organic matter in soil	SORM312	
											√	essential	soil fertility	SOFE311	
											√	essential	soil chemistry	SOCH313	
											√	essential	soil and water	SWPO314	
											√	essential	Design and	DAEX327	
											√	essential	remote sensing	RESE315	Stage Three,
											√	essential	soil salinity	SSAL316	
											√	essential	soil morphology	SMOR317	

											√	essential	irrigation	IRRQ318	Second Semester
											√	essential	puncture	DRAN319	
											√	essential	soil minerals	SMIN320	
											√	essential	Natural Resource Economics	RECO321	

Program Skills Map															
Required learning outcomes of the program															
knowledge												Essential or ?optional	Course name	Course code	Year/Level
	A.11	**A.10**	**A.9**	**A.8**	**A.7**	**A.6**	**A.5**	**A.4**	**A.3**	**A.2**	**A.1**				
						√	√	√	√	√	√	essential	Soil survey and	SSCL412	Fourth stage, first semester
						√	√	√	√	√	√	essential	Soil maintenance	SWCO413	
						√	√	√	√	√	√	essential	Microscopic soil	SMIC414	
						√	√	√	√	√	√	essential	The relationship	SWPR415	
						√	√	√	√	√	√	essential	Hydrology and	HWRE417	
						√	√	√	√	√	√	essential	Irrigation systems	IRTE418	

					√	√						essential	Graduation	GRPR421	
				√	√	√	√	√				essential	Soil management	SMAN419	Fourth stage, second semester
				√	√	√	√	√				essential	desertification	DESE420	
				√	√	√	√	√				essential	Plant nutrition	PLNU426	
				√	√	√	√	√				essential	Fertilizer	FETE424	
			√	√	√	√	√	√	√			essential	land reclamation	LARE416	
									√			essential	seminars	SEMN423	
						√	√					essential	Graduation	GRPR422	

Program Skills Map															
Required learning outcomes of the program															
The skill												Essential or ?optional	Course name	Course code	Year/Level
		B10	**B9**	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**				
							√	√	√	√	√	essential	Soil survey and	SSCL412	Fourth stage,
							√	√	√	√	√	essential	Soil maintenance	SWCO413	
							√	√	√	√	√	essential	Microscopic soil	SMIC414	

					√	√	√	√	√			essential	The relationship	SWPR415	first semester
					√	√	√	√	√			essential	Hydrology and	HWRE417	
					√	√	√	√	√			essential	Irrigation systems	IRTE418	
									√			essential	Graduation	GRPR421	
				√	√	√	√	√	√			essential	Soil management	SMAN419	Fourth stage, second semester
				√	√	√	√	√	√			essential	desertification	DESE420	
				√	√	√	√	√	√			essential	Plant nutrition	PLNU426	
					√	√	√	√				essential	Fertilizer	FETE424	
					√	√	√	√				essential	land reclamation	LARE416	
					√	√	√	√				essential	seminars	SEMN423	
					√	√	√	√				essential	Graduation	GRPR422	

Program Skills Map														
Required learning outcomes of the program														
The values												Essential or ?optional	Course name	Course code	Year/Level
							C5	**C4**	**C3**	**C2**	**C1**				

											√	essential	Soil survey and	SSCL412	Fourth stage, first semester
											√	essential	Soil maintenance	SWCO413	
											√	essential	Microscopic soil	SMIC414	
											√	essential	The relationship	SWPR415	
											√	essential	Hydrology and	HWRE417	
											√	essential	Irrigation systems	IRTE418	
											√	essential	Graduation	GRPR421	
											√	essential	Soil management	SMAN419	Fourth stage, second semester
											√	essential	desertification	DESE420	
											√	essential	Plant nutrition	PLNU426	
											√	essential	Fertilizer	FETE424	
											√	essential	land reclamation	LARE416	
											√	essential	seminars	SEMN423	
											√	essential	Graduation	GRPR422	

Course Description Form Principles of Soil Science

Course name .1					
Principles of Soil Science					
Course code .2					
SOIL214					
Semester/Year .3					
First - Second Stage					
Date of preparation of this description .4					
2024-1-31					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3.5 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name :Rashad Adel Imran EmailRashad.imran@uopbasrah.edu.iq Dr. Amin Hussein Jabal					
Course objectives .8					
• science Understanding the concept of soil • The most important properties of soil • Soil formation factors, physical properties and fertility			Course objectives		
Teaching and learning strategies .9					
.weeks of in-person lectures, including two monthly exams and daily exams 15			Strategy		
Course structure .10					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Definition of soil science: The main components of soil Mineral soils and	Student's knowledge of soil components and continued formation	2	1

Daily exam	Lecture with presentation	soilformation Factors of soil formation		2	2
Daily exam	Lecture with presentation	Physical properties of soil Soil Texture Soil Structure Positive ions extended on the exchange complex	The student learns about the physical properties that affect .production	2	3
Daily exam	Lecture with presentation	:Bulk density of soil Porosity and pore :size distribution The effect of soil composition on .plant growth SoilAir : :Soil temperature	Introducing the student to water relations in the soil	2	4
Daily exam	Lecture with presentation	Soil water and moisture content soil water energy Factors affecting water availability for plants Water movement in soil	Introducing the student to the moisture content and irrigation levels that should be added to the .soil	2	5
Daily exam	Lecture with presentation	Colloids and chemical properties of soil mineral colloids Organocolloids	Introducing the student to soil colloids and their effect on soil fertility	2	6
Daily exam	Lecture with presentation	Adsorption and ion exchange in soil The predominant exchangeable ions :in soil are Factors affecting cation exchange capacity	Knowing the soil's ability to hold nutrients	2	7
Daily exam	Lecture with presentation	Salinity and alkalinity of soil Classification of salt-affected soil The effect of salinity on agricultural production Reclamation of lands affected by salinity	Introducing students to the problem of soil salinity and how to deal with it	2	8

Daily exam	Lecture with presentation	Proper management of reclaimed soils	How to deal with and manage reclaimed soils	2	9
Daily exam	Lecture with presentation	Coexistence with salinity and alkalinity	Selecting salt-tolerant crops and increasing production	2	11-10
Daily exam	Lecture with presentation	Biological properties of soil	Introducing the student to useful soil revival	2	12
Daily exam	Lecture with presentation	Environmental :classification Main groups of soil biota	Main soil biology groups	2	13
Daily exam	Lecture with presentation	Fungal activities in soil		2	14
Daily exam	Lecture with presentation	The role of microscopic soil :organisms The carbon cycle in nature	The role of living things in the role of nutrients	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture	Introduction to soil layers and their components	In it, the student learns the components of the .soil and its layers	3	1
Practical activity	Lecture with practical experience describing the case	Methods of taking soil samples from the field	The student learns how .to take soil samples	3	2
Daily exam	Lecture with practical experience describing the case	CEC Appreciation Experience	In it, the student learns how to estimate the exchange capacity and .its importance	3	3
Daily exam	Lecture with practical experience describing the case	Bulk density estimation experiment	In it, the student learns the basics and how to estimate apparent .density		4
Practical activity	Lecture with practical experience describing the case	Capillary action measurement of water height + soil moisture	The student learns the scientific reasons for the rise of water by capillary action and learns about methods of measuring soil .moisture	3	5

Daily exam	Lecture with practical experience describing the case	Soil texture estimation experiment	Students learn how to estimate soil texture .and its importance	3	6
Daily exam	Lecture with practical experience describing the case	Estimation of positive and negative ions in soil	In it, the student learns how to estimate negative and positive .ions from soil samples	3	7
Practical activity	Lecture with practical experience describing the case	Measurement experimentpH andEC	The student learns to estimate the salinity and alkalinity of the soil and their .importance		8
Daily exam	Lecture with practical experience describing the case	Sodium ion estimation	The student learns the importance of the element sodium and .how to estimate it	6	9
Practical activity	Lecture with practical experience describing the case	organic soil material	The student learns the role of organic matter .and how to estimate it		10
Daily exam	Lecture with practical experience describing the case	Biological and biochemical properties of soil. Estimation of .soil organic matter	In it, the student learns about the importance .of soil fertility	3	11
Daily exam		Experiment to isolate some types of soil organisms	In it, the student learns about the importance of organic matter in the soil and how to .estimate it	3	12
		exam	exam	3	13
Daily exam	Lecture with practical experience describing the case	Experiment to isolate some types of soil organisms	In it, the student receives information about the importance of soil revitalization and the method of .isolating it	3	14
Daily exam	Lecture with practical experience describing the case	Colony counting experiment	In it, the student learns .how to count colonies	3	15
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					
Learning and teaching resources .12					
Dr. Abdullah Najm Al-Ani. 1980. Principles of Soil Science. Ministry of Higher Education and Scientific Research. University of .Baghdad, House of Wisdom				Required textbooks (methodology (if available	
Soil survey staff Manual, 2003, USD				Main References (Sources)	

Course name .1
Baath regime crimes
Course code .2
BACR205
Semester/Year .3
Chapter One / Stage Two
Date of preparation of this description .4
2024
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours per week 2
Name of the course supervisor (if more than one name is mentioned) .7
:NameAsst. Dr. Wedad Salem Mohammed :Emailwidad.mohammad@uobasrah.edu.iq
Course objectives .8

1- Talking about a part of contemporary Iraqi history, the circumstances it went through, and the nature of the Baath .regime that was prevalent in Iraq at that time 2- Highlighting the crimes of genocide and human rights violations committed against the Iraqi people	Course objectives

Teaching and learning strategies .9	
The course includes (2) theoretical hours - the number of weekly hours is approved and .distributed over 15 weeks	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Crimes of the Ba'ath regime according to the Iraqi High Criminal Court Law of 2005	Knowing the types of crimes legally classified	2	1
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Crimes of the Ba'ath regime as documented by the Iraqi Supreme Criminal Court Law of 2005	Understanding the mechanisms of documentation	2	2

Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Decisions issued by the Supreme Criminal Court	Analysis of the content of some decisions and their legal	2	3
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Psychological and social crimes, their effects, and the most prominent violations of .the Ba'ath regime in Iraq	Determining the psychological and social	2	4
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	The Baath regime's position on religion	Evaluating the regime's policies towards	2	5
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Violations of Iraqi laws	Distinguishing cases of violations of the laws by the	2	6
		First exam	Assessing students' comprehension of previous	2	7
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Some decisions on the political and military violations of the Baath regime	Analysis of some political and military examples of	2	8
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Baath regime prisons and detention centers	Identifying detention sites, methods, and violations	2	9
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Environmental crimes of the Ba'ath regime in Iraq	Understanding the scale and impact of environmental	2	10
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	War pollution, radioactivity, mines, and the destruction of cities and villages	Study of long-term environmental and health	2	11
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Draining the marshes and destroying palm groves, trees and crops	Analysis of the environmental and economic impact of these	2	12
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Mass grave crimes	Knowing the background of mass crimes and ways to	2	13
Surprise tests and assigning students to manage the lecture under our	An explanatory lecture with explanations	Chronological classification of genocide graves in Iraq for the period 1963-2003	Distinguishing the stages and methods of genocide across	2	14

		Second month exam	Measure advanced understanding of second		15

Course Evaluation .11	
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, .daily, oral, monthly and written exams, reports, etc	
Learning and teaching resources .12	
Baath regime crimes in Iraq	Required textbooks (methodology if (available
Disintegration of the family and society in and from .1 .the Baath	Main References (Sources)
scientific journals	Recommended supporting books and references (scientific journals, reports...)
fibers Some research and articles on	Electronic references, websites

Course Description Form Vegetable Production

Course name .1
Vegetable production
Course code .2
VGPR236
Semester/Year .3
First / Second stage
Date of preparation of this description .4
1 -10 3 202-
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 52.5 units
Name of the course supervisor (if more than one name is mentioned) .7

:Name: Jamil Hassan Haji Email jameel.haji@uobasrah.edu.iq Assistant Professor: Khayoun Abdul Abdul Sayed					
Course objectives .8					
• Vegetables are important to humans, so those who care for them around the world should know how to grow them and the types of them, and divide them into families, and each family is divided into varieties, and the varieties differ from .one another • Teaching students about types of families			Course objectives		
Teaching and learning strategies .9					
.weeks of in-person lectures, including two monthly exams and daily exams 15				Strategy	
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	The aim of the study is to study the production of vegetables in Iraq, the vegetable production areas in Iraq, and the .nutritional value of vegetables	Learn about the importance of vegetables, their production and nutritional .value	1	1
Daily exam	Lecture with presentation	Seedling and acclimatization in vegetable crops	Understanding transplanting techniques and the impact of acclimatization on crop success	1	2
Daily exam	Lecture with presentation	Factors affecting vegetable production	Distinguish between environmental and economic factors affecting production	1	3
Daily exam	Lecture with presentation	Types of irrigation used in vegetable crops	Learn about the appropriate irrigation methods for .vegetable crops	1	4
Daily exam	Lecture with presentation	The Crusader Family - The Insult	Study of the characteristics and cultivation	1	5

			of the cabbage crop		
Daily exam	Lecture with presentation	Cruciferous family - cauliflower and broccoli	Distinguishing between the requirements for growing cauliflower and broccoli	1	6
Daily exam	Lecture with presentation	Garlic family - onions	Learn about onion production methods and growth stages	1	7
Daily exam	Lecture with presentation	First monthly exam	Evaluation of understanding of the studied crops	1	8
Daily exam	Lecture with presentation	Garlic family - garlic and leeks	Learn about the growing conditions for .garlic and leeks	1	9
Daily exam	Lecture with presentation	Legume family - Peas - Broad beans	Understanding the production characteristics of peas and broad beans	1	10
Daily exam	Lecture with presentation	The complex family - lettuce	Learn about growing and managing .lettuce crops	1	11
Daily exam	Lecture with presentation	The tent family - islands	Learn about carrot cultivation and its environmental needs	1	12
Daily exam	Lecture with presentation	Apiaceae family - celery - parsley	Comparison of the cultivation characteristics of celery and parsley	1	13
Daily exam	Lecture with presentation	The Ramara family - beetroot - chard - spinach	Study of the production and uses of these crops	1	14
Daily exam	Lecture with presentation	monthly exam	Evaluation of knowledge gained about the mentioned crops	1	15

Practical part					
Evaluation method	Learning method	The Malvaceae family (okra)	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Cucurbitaceae family - cucumber - watermelon	Learn about okra cultivation practically	3	1
Daily exam	Lecture with presentation	Pumpkin - Squash - Zucchini - Cucumber	Practical application for growing cucumbers and	3	2
Daily exam	Lecture with presentation	Narcissus family - onions	Field cultivation of these crops	3	3
Daily exam	Lecture with presentation	Garlic - Leek	Implementing the steps for planting onions in the field	3	4
Daily exam	Lecture with presentation	Legume family - Broad bean	Practical training on growing garlic and leeks	3	5
Daily exam	Lecture with presentation	beans	Learn the steps for cultivating broad beans in the field	3	6
Daily exam	Lecture with presentation	Peas	Training on growing beans from seed to harvest	3	7
Daily exam	Lecture with presentation	Subject exam	Implementing pea and cowpea cultivation and monitoring	3	8
Daily exam	Lecture with presentation	Solanaceae family - tomatoes	Evaluation of practical performance in the cultivation	3	9
Daily exam	Lecture with presentation	potatoes	Practical application of tomato production in	3	10
Daily exam	Lecture with presentation	pepper	Potato cultivation practice from seed to harvest	3	11

Daily exam	Lecture with presentation	eggplant	Practical knowledge of the stages of pepper	3	12
Daily exam	Lecture with presentation	Poaceae family - sweet corn	Implementing the steps for planting and caring for the	3	13
Daily exam	Lecture with presentation	Subject exam	Sweet corn cultivation and development monitoring	3	14
Daily exam	Lecture with presentation	The Malvaceae family (okra)	Test of acquired practical skills	3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Vegetable production 1 Practical vegetable production	Required textbooks (methodology if (available
Adnan Nasser (1979) is required. Practical Vegetables Curriculum for the Third Year / Horticulture / Colleges of Agriculture, College of Agriculture and Forestry / University	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
Using live videos in the lesson	Electronic references, websites

Principles of Microbiology Course Description Form

Course name .1
Principles of Microbiology
Course code .2
MICB218
Semester/Year .3
First - Second Stage
Date of preparation of this description .4

2023-9-1

Available forms of attendance .5

My presence

Number of study hours (total) / Number of units (total) .6

practical) 3.5 units 3 + theoretical hours (2 5

Name of the course supervisor (if more than one name is mentioned) .7

:Name Asst. Prof. Dr. Zainab Kazim Hassan Email: Zainab.kadhim@uobasrah.edu.iq
Ms. Hoda Ahmed Yassin Al-Janabi huda.yassen@uobasrah.edu.iq

Course objectives .8

• Definition of microbiology and naming and classification of microscopic organisms in the world of biology • Bacteria - their presence - their components - their shapes and the bacterial cell wall and its components - the cytoplasmic membrane and its components • Cytoplasm - nucleic acids - nucleic acid composition • Interspores - plasmids - fungal spores - description of the fungal body - its importance - economic importance and damages	Course objectives

Teaching and learning strategies .9

.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with explanation	Definition and development of microbiology	Introducing the student to the equipment in	2	1
Daily exam	Lecture with explanation	The taxonomic position of microorganisms in the living world	Introducing the student to the sterilization	2	2
Daily exam	Lecture with explanation	Naming microscopic organisms - Classification of organisms	Introducing the student to how to take samples	2	3
Daily exam	Lecture with explanation	Bacteria - their presence - their components - their shapes	Introducing the student to how to isolate and	2	4
Daily exam	Lecture with explanation	Bacterial cell wall and its components - cytoplasmic membrane and its components	Introducing the student to how to diagnose	2	5

Daily exam	Lecture with explanation	Permeability and selectivity across cytoplasmic membranes	Introducing the student to fungi, how to	2	6
--	---	First monthly exam	-	2	7
Daily exam	Lecture with explanation	Bacterial flagella - pili - extracytoplasmic organelles	Introduce the student to how to use staining	2	8
Daily exam	Lecture with explanation	Cytoplasm - nucleic acids - nucleic acid composition Intersporins - spores - plasmids	Introducing the student to how to use staining	2	9
Daily exam	Lecture with explanation	Fungi - description of the fungal body - their importance economic importance and -	Introduce the student to how to use staining	2	11-10
Daily exam	Lecture with explanation	Fungal cell structure - cytoplasm and its contents	Introducing the student to the use of various	2	12
Daily exam	Lecture with explanation	Algae - types - occurrence - location among organisms - growth - reproduction	Introducing the student to the use of	2	13
Daily exam	Lecture with explanation	Viruses	Virus concepts and their effects	2	14
-	-	Second monthly exam		2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
-	Lecture with explanation	Getting to know the microbiology lab - safety instructions and methods -	Introducing the student to the equipment in	3	1
Daily exam	Lecture with explanation	Sterilization methods - Microscope components and uses - How to prepare a glass	Introducing the student to the sterilization	3	2
Report containing the results of laboratory	Lecture with explanation	Sampling methods for microorganisms - isolation of microorganisms	Introducing the student to how to take samples	3	3
Report containing the results of laboratory	Lecture with explanation	Methods of purifying microorganisms - methods of counting microorganisms	Introducing the student to how to isolate and	3	4
Report containing the results of laboratory	Lecture with explanation	Bacterial diagnosis - bacterial shapes - bacterial clusters	Introducing the student to how to diagnose	3	5
Report containing the results of laboratory	Lecture with explanation	Fungi - Fungal diagnosis - Colony morphology - Colony measurement methods	Introducing the student to fungi, how to	3	7-6
-	-	First month exam	-	3	8

Daily exam	Lecture with explanation	Simple bacterial staining	Introduce the student to how to use staining	3	9
Report containing the results of laboratory	Lecture with explanation	Differential bacterial staining	Introducing the student to how to use staining	3	10
Daily exam	Lecture with explanation	Spore and capsule staining in bacteria	Introduce the student to how to use staining	3	11
Report containing the results of laboratory	Lecture with explanation	inhibition of bacteria	Introducing the student to the use of various	3	12
Daily exam	Lecture with explanation	Antibiotics and their measurement methods	Introducing the student to the use of	3	13
Daily exam	Lecture with explanation	The effect of environmental factors on the growth of organisms	Introducing the student to the effect of	3	14
-	-	Second monthly exam		3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Microbiology*. Wafaa Jassim. 1980 Principles of Microbiological Physiology. Dr. Maha Raouf. 1982	Required textbooks (methodology if available)
TNAU (ICAR)(2019). Agricultural Microbiology. Agrimoon.com.	Main References (Sources)
	Recommended supporting books and references (scientific
	Electronic references, websites

English Language Course Description Form 2

Course name .1
English language /2
Course code .2
ENGL206
Semester/Year .3
First / Second Stage

Date of preparation of this description .4	
2024	
Available forms of attendance .5	
My presence	
Number of study hours (total) / Number of units (total) .6	
units 2 / hours per week 2	
Name of the course supervisor (if more than one name is mentioned) .7	
Abed Ibrahim Name: Fares farse.abrahee @uobasrah.edu.iq	
Course objectives .8	
He should So For students a task English the language Use road on Correct pronunciation Use How to education To change Many exercises It is Therefore and the rules reading Units there Rules And use and attributes And the name verb . Herbs And conjugation and the soil plant to Belongs to	Course objectives
Teaching and learning strategies .9	
The course includes (2) theoretical hours - the number of weekly hours is .approved and distributed over 15 weeks	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Exam Daily	a lecture with to explain the	And its function plants parts		2	1
Exam Daily	a lecture with the offer	and the Rules identification And negative active voice		2	2
Exam Daily	a lecture with to explain the	plant life turn		2	3
Exam Daily	a lecture with to explain the	And the Rules identification sequence		2	4
Exam Daily	a lecture with to explain the	soil And formation pedigreed		2	5
Exam Daily	a lecture with to explain the	grammarian amplification And the explanation		2	6

Exam Daily	a lecture with to explain the	and irrigation Exchange		2	7
Exam Daily	a lecture with to explain the	And the Classification grammarian definition		2	8
Exam Daily	a lecture with to explain the	and fertilizers fertilizer		2	9
Exam Daily	a lecture with to explain the	And Diagnosis + Symptoms treatment		2	10
Exam Daily	a lecture with to explain the	and Weeds Combating Vegetarianism diseases		2	11
Exam Daily	a lecture with to explain the	Description identification disease		2	12
Exam Daily	a lecture with to explain the	Market gardening		2	13
Exam Daily	a lecture with to explain the	And its function plants parts		2	14
Exam Daily	a lecture with to explain the	and the Rules identification And negative active voice		2	15

Course Evaluation .11	
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc	
Learning and teaching resources .12	
	Required textbooks (methodology if (available
Alan Mountford (1985) English in agriculture, Oxford university	Main References (Sources)
Yin, Shengchao, et al. "Headway distribution modeling with regard to traffic status." *2009 IEEE intelligent vehicles symposium* . IEEE, 2009.	Recommended supporting books and references (scientific journals, reports...)
Soars, John, and Liz Soars. *New headway: Beginner student's book* . Oxford: Oxford University Press, 2010-2010	Electronic references, websites

Course Description Form Biochemistry

Course name .1

Biochemistry
Course code .2
BICH230
Semester/Year .3
First - Second Stage
Date of preparation of this description .4
1-10-2023
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) / 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Ghaida Ali Makki Email ghaidda.makki@uobasrah.edu.iq
Course objectives .8

- Working in the field of biochemistry - Introducing the student to the biochemistry curriculum - Helping students understand the curriculum and vocabulary of the lesson and syllabus of Sugars, Proteins and the Cell - Identify the most important factors affecting enzymes inside	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	
Theoretical part	

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	Introduction to Biochemistry - Components of the Living Cell and Their Functions	To introduce the student to biochemistry and explain the	2	1
Daily exam	Lecture with presentation	Carbohydrates: definition, types, and discoveries, along with sugar .structures and spatial structure	The student will be able to distinguish between types of carbohydrates,	2	2

Daily exam	Lecture with presentation	Monosaccharides - Monosaccharide analogues - Monosaccharide derivatives - Cyclic structure of sugars	The student should explain the properties of monosaccharides,	2	3
Daily exam	Lecture with presentation	Visual effectiveness	To explain to the student the concept of optical activity .of sugars	2	4
Daily exam	Lecture with presentation	Polysaccharides - homogeneous and heterogeneous types	The student will be able to differentiate between	2	5
Daily exam	Lecture with presentation	cyclic polysaccharides	The student will define fats, identify the types of fatty acids, their	2	6
Daily exam	Lecture with presentation	Fats - definition - importance - fatty acids - types - structures - reactions - geometric similarities of fatty acids	The student will classify simple fats and explain the composition of	2	7
Daily exam	Lecture with presentation	Types of simple fats (oils, fats, and waxes), their structures, and fat constants	The student should be able to distinguish between	2	8
Daily exam	Lecture with presentation	Compound and derived fats - their types and compositions	The student classifies amino acids according to their chemical	2	9
Daily exam	Lecture with presentation	Amino acids - their divisions, structures, properties of amino acids, and reactions	The student should explain the structure of proteins and the	2	10
Daily exam	Lecture with presentation	Peptides - Proteins: Definition - Classification - Levels of Protein Synthesis - Denaturation	The student should be able to distinguish between the types	2	11
Daily exam	Lecture with presentation	Nucleic acids, their functions, and types of amino acids	The student classifies vitamins according to solubility and	2	12
Daily exam	Lecture with presentation	vitamins	The student should explain the mechanism of action of enzymes,	2	13
Daily exam	Lecture with presentation	Enzymes - definition, classification, and factors affecting the rate of enzyme reactions	The student will understand the basic metabolic pathways and their	2	14

Daily exam	Lecture with presentation	metabolism	To introduce the student to biochemistry and explain the	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Carbohydrates - Colorimetric Tests for Sugars	The student should perform sugar detection tests (such	3	1
Daily exam	Lecture with presentation	Working Methods - Tests and Results	The student should apply laboratory work steps	3	2
Daily exam	Lecture with presentation	Natural properties of fats	The student will be able to distinguish the physical	3	3
Daily exam	Lecture with presentation	Chemical tests of fats	The student should carry out fat detection tests (such	3	4
Daily exam	Lecture with presentation	Numerical constants of fats	The student should measure constants such as	3	5
Daily exam	Lecture with presentation	Methods of measuring constants and their importance	The student should explain the importance of	3	6
Daily exam	Lecture with presentation	Methods of Action - Properties of Fats	The student will apply the steps of conducting	3	7
Daily exam	Lecture with presentation	Methods of work - Chemical tests for fats	The student will conduct laboratory experiments to	3	8
Daily exam	Lecture with presentation	Proteins - Colorimetric Tests	The student will conduct biuret, ninhydrin, and	3	9
Daily exam	Lecture with presentation	Protein deposition	The student will experiment with protein precipitation	3	10
Daily exam	Lecture with presentation	How to do color tests	The student should list the steps involved in	3	11
Daily exam	Lecture with presentation	How to make protein precipitation	The student will apply the steps of protein precipitation	3	12
Daily exam	Lecture with presentation	vitamins and enzymes	The student will conduct one or more experiments to	3	13
a report	------	Visit laboratories at the university		3	14

		exam		3	15
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					
Learning and teaching resources .12					
Hassan, Ali Muhammad and Shihab, Saad Khalil. (1979) Agricultural Biochemistry, Part One, Baghdad University Press				Required textbooks (methodology (if available	
Stryer,L.(1995).Biochemistry .4 th edition .freeman (USA)				Main References (Sources)	
https://nu.edu.om/medicine/biochemistry/?lang=ar				Recommended supporting books and references (scientific journals,	
https://www.neelwafurat.com/itempage.aspx?id=egb70759-5070740&search=books https://www.rwaq.org/courses/introduction-to-				Electronic references, websites	

Course Description Form Environment and Meteorology

Course name .1
Environment and weather
Course code .2
EWCO212
Semester/Year .3
First - Second Stage
Date of preparation of this description .4
1 -10 3 202-
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) / 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Hanan Abdel Wahab SaeedEmail hanan.saeed@uopbasrah.edu.iq

Course objectives .8	
• Understanding the concept ecology • The most important factors affecting climate change • The amount of benefit from the appearance of precipitation by the plant	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	Learn about the ecosystem and its divisions		2	1
Daily exam	Lecture with presentation	Ocean components and their impact on vegetation		2	2
Daily exam	Lecture with presentation	The effect of maximum, minimum and optimum temperatures on plant growth		2	3
Daily exam	Lecture with presentation	Daily temperature regime and thermal inversion		2	4
Daily exam	Lecture with presentation	Atmospheric pressure and factors affecting it		2	5
Daily exam	Lecture with presentation	Wind movement and types and the most important damages they cause to plants		2	6
Daily exam	Lecture with presentation	Air masses and fronts		2	7
Daily exam	Lecture with presentation	Air humidity and the most important factors affecting it		2	8
Daily exam	Lecture with presentation	The relationship between evaporation and plant distribution		2	9
Daily exam	Lecture with presentation	Manifestations of condensation The most important manifestations of precipitation and its impact on plant		2	1011-

Daily exam	Lecture with presentation	water balance		2	12
Daily exam	Lecture with presentation	plant succession		2	13
Daily exam	Lecture with presentation	Environmental awareness and its importance in future planning		2	14
Daily exam	Lecture with presentation	Practical applications of ecology in the field of agriculture and natural resource development		2	15
Practical part					
Evaluation method	Learning method	Visit a weather station to learn about .rain measurement methods	Required learning outcomes	watche s	week
Daily exam	Lecture with presentation	Tasks and divisions of ecology		3	1
Daily exam	Lecture with presentation	Types of weather station equipment		3	2
Daily exam	Lecture with presentation	Wind system around atmospheric pressure zones, wind speed measuring devices, and measurement explanation on weather maps		3	4+3
Daily exam	Lecture with presentation	Wind speeds are measured according to a scale provided by the		3	5
Daily exam	Lecture with presentation	Solar radiation measurement		3	6
Daily exam	Lecture with presentation	Measurement of light intensity		3	7
Daily exam	Lecture with presentation	Evaporation measurement methods		3	8
Daily exam	Lecture with presentation	Devices used to measure relative humidity		3	9
Daily exam	Lecture with presentation	Factors affecting atmospheric pressure and devices used to measure it		3	11-10

Daily exam	Lecture with presentation	rain gauges		3	12
Daily exam	Lecture with presentation	thermometers		3	13
Daily exam	Lecture with presentation	The negative effects of high temperatures on plant growth		3	14
Daily exam	Lecture with presentation	Effects and causes of rising temperatures on planet Earth		3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Dr. Hekmat Abbas Al-Ani and Dr. Raad Hashim Bakr. 1984.., Ministry of Higher Education and Scientific Research. University	Required textbooks (methodology (if available
Foundamentals of ecosystem science, 2012,	Main References (Sources)
	Recommended supporting books and references (scientific
	Electronic references, websites

Course Description Form Principles of Statistics

Course name .1
Principles of Statistics
Course code .2
STAT224
Semester/Year .3
First - Second Stage
Date of preparation of this description .4
2025-01-20
Available forms of attendance .5
My presence

Number of study hours (total) / Number of units (total) .6	
hours (2 theoretical + 3 practical) 3.5 units 5	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name :Hossam Hassan Abdel-AliEmail husam.abdulaali@uobasrah.edu.iq :Mohsen Naseh Hoshan Emailmohsin.hoshan@uobasrah.edu.iq	
Course objectives .8	
• .Identify the nature of data and statistical symbols • Methods of tabulating raw data and creating frequency .distribution tables • Hypothesis testing and decision making in statistical hypotheses	Course objectives
Teaching and learning strategies .9	
weeks of in-person lectures, including two monthly exams and daily 15 .exams	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Oral discussion and	• Theoretical lecture • Presentation	A brief history of statistics Definition of statistics Statistics division	Students learn about statistics and its	hours 2	the first
Oral discussion and	• Theoretical lecture • Presentation	Statistical symbols	Students learn about the types of statistical	hours 2	the second
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Tabular presentation and data summary	Students learn about tabular presentation and summarizing	hours 2	the third
Oral discussion and questions	• Theoretical lecture • Presentation Group	Frequency distribution tables	Students learn about frequency distribution	hours 2	Fourth
Oral discussion and	• Theoretical lecture • Presentation	Centering measures	Students learn about centering	hours 2	Fifth
Oral discussion and	• Theoretical lecture • Presentation	Dispersion measures	Students learn about measures of	hours 2	Sixth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Probability distributions continuous or connected	Students learn about probability .distributions Continuous or connected with	hours 2	Seventh

nothing	nothing	First month exam	nothing	hours 2	The eighth
Oral discussion and	• Theoretical lecture • Presentation	normal distribution	Students learn about the normal	hours 2	Ninth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Hypothesis testing Statistical errors	Students learn about hypothesis .testing Statistical	hours 2	10th
Oral discussion and	• Theoretical lecture • Presentation	Z test-	Students learn about theZ-test and solve	hours 2	eleventh
Oral discussion and questions	• Theoretical lecture • Presentation Group	t distribution-hypothesis testing	Students will learn about the t- distribution and t- test	hours 2	twelfth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	f distribution- Hypothesis - Testingf	Students learn about thef-distribution. Hypothesis - Testingf with	hours 2	thirteenth
nothing	nothing	Second month exam	nothing	hours 2	fourteenth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Simple linear correlation and simple linear regression	Students will learn about simple linear correlation and simple linear	hours 2	fifteenth
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Definitions of statistical terms	Students learn about statistical symbols and their most	hours 3	the first
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of statistical Discuss .symbols and give some examples	Students solve discuss and examples and problems about statistical	hours 3	the second

Oral discussion and questions	• Practical lecture • Presentation Group	practical Solve and discuss examples of graphic display .types	Students solve discuss and examples and practical	hours 3	the third
Oral discussion and questions	• Practical lecture • Presentation Group	examples of Solve and discuss .frequency distribution tables	Students solve discuss and examples and problems	hours 3	Fourth
Oral discussion and questions	• Practical lecture • Presentation Group	examples of Solve and discuss centering measures	Students solve discuss and examples and problems	hours 3	Fifth
Oral discussion and questions	• Practical lecture • Presentation Group	examples of Solve and discuss .dispersion measures	Students solve discuss and examples and problems	hours 3	Sixth
Oral discussion and questions	• Practical lecture • Presentation Group	examples of Solve and discuss continuous or connected .probability distributions	Students solve discuss and examples and problems	hours 3	Seventh
nothing	nothing	First month exam	nothing	hours 3	The eighth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of Solve and discuss the normal distribution and calculate the areas under the .normal curve	Students solve discuss and examples and problems about the normal	hours 3	Ninth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of Solve and discuss hypothesis testing	Students solve discuss and examples and problems about hypothesis testing	hours 3	10th
Oral discussion and	• Practical lecture • Presentation	Solve and discuss examples of theZ- .test	Students solve discuss and examples and	hours 3	eleventh
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of Solve and discuss the uses of thet -test in statistical .hypothesis testing	Students solve discuss and examples and problems about the uses of thet -test in	hours 3	twelfth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of Solve and discuss the uses of thef- test in statistical .hypothesis testing	Students solve discuss and examples and problems about the uses of thef- test in	hours 3	thirteenth

nothing	nothing	Second month exam	nothing	hours 3	fourteenth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	examples of Solve and discuss simple linear correlation and .simple linear regression	Students solve discuss and examples and problems on simple linear	hours 3	fifteenth

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Al-Rawi, Khashe' Mahmoud, 1985. Introduction to .Statistics, University of Baghdad, College of Agriculture	Required textbooks (methodology if (available
Steel, R. D. and J. H. Torrie, 1980. Principles and procedures of statistics.	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Principles of Plant Protection :Course Description Form

Course name .1
Plant protection principles
Course code .2
PLPR222
Semester/Year .3
Second / First Stage
Date of preparation of this description .4
2024/2/1
Available forms of attendance .5
My presence in college halls
Number of study hours (total) / Number of units (total) .6
Number of hours: 2 Number of units: 3.5
Name of the course supervisor (if more than one name is mentioned) .7

Name: Asst. Prof. Dr. Hussein Ali Mahdi :Email husien.mahdi@uobasrah.edu.iq					
Course objectives .8					
• Learn about the most important pests and diseases prevalent in Iraq and the world and the types of causes .that cause them • Classifies types of pests and diseases, their causes, .their life cycle, or the nature of their reproduction • The student distinguishes between types of pests and diseases and the most important methods used to .reduce their impact on crop productivity • Knows the scientific methods used to reduce the damage caused by pests and diseases by following			Course objectives		
Teaching and learning strategies .9					
Use of presentations/pictures/brochures/books / Field visits to beehives			Strategy		
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Monthly and daily exams and activities	Theoretical Practical +	Identifying insect species	Distinguish between insect species according to their classification and characteristics	2	1
		Identify the conditions and adaptations that help insects .survive in the environment	Understanding the mechanisms of insect adaptation to the environment	2	2
		Distinguishing insect reproduction and egg development stages	Learn about the life cycle and reproduction of insects	2	3
		How to deprive harmful insects of their food sources	Learn effective ways to reduce .insect damage	2	4
		First exam	Assessing theoretical understanding of insect units	1	5
		Identify the positive and negative conditions .affecting the life of insects	Analysis of the impact of the environment on insect activity and spread	2	6
		How to get rid of insects	Study of insect control strategies	2	7

		Solid and liquid pesticides	Distinguish between types of pesticides and their uses	2	8
		The structure of the dream body and its distinction from the insect	Understanding the anatomical differences between dreams and insects	2	9
		Second exam	Measuring the extent of comprehension of subsequent units	1	10
		Large non-insect species of plant pests	Classification of non-insect organisms harmful to plants	2	11
		Classification of plant pathogens	Identify and classify plant pathogens	2	12
		Identify diseases that have .no living cause	Identifying non-parasitic physiological diseases	2	13
		How to reduce the spread of parasitic pathogens	Learn about preventive and therapeutic methods .against pathogens	2	14
		jungle resistance mechanisms	Understanding mechanical and chemical methods of weed control	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with	Requirements for a plant pathology laboratory	Identify the basic requirements for	3	1
Daily exam	Lecture with	Conditions required for an insect laboratory	Knowledge of insect laboratory	3	2
Daily exam	Lecture with	Insect body parts	Distinguish between the main	3	3
Daily exam	Lecture with	Insect legs and their types	Knowing the shapes of legs and their	3	4
Daily exam	Lecture with	Insect mouthparts and antennae	Recognizing the diversity of oral and	3	5
Daily exam	Lecture with	Insect wings and their types	Distinguishing between wing	3	6
Daily exam	Lecture with	Types of insect larvae and pupae	Distinguishing between immature	3	7

Daily exam	Lecture with	Media used in growing fungi	Knowing the types of media and how to	3	8
Daily exam	Lecture with	Fungal isolation	Practical application on	3	9
Daily exam	Lecture with	Fungi purification	Practice the steps of purifying	3	10
Daily exam	Lecture with	Some common pests and ways to control them	Learn about methods of	3	11
Daily exam	Lecture with	Virus isolation	Learn about plant virus detection	3	12
Daily exam	Lecture with	Nematode isolation	Learn how to extract nematodes	3	13
Daily exam	Lecture with	Bacterial isolation	Practice methods for isolating and	3	14
Daily exam	Lecture with	Visit the insect museum to .learn about different pests	Gain firsthand knowledge of	3	15

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, .daily, oral, monthly and written exams, reports, etc

5	The jugs
5	Absences
30	monthly exams
5	Extracurricular activities
5	Quarterly report
50	final exam

Learning and teaching resources .12

Insect pests	Required textbooks (methodology if available)
Principles of Plant Protection((Insects Section	Main References (Sources)
Principles of Plant Protection(Part of Plant	Recommended supporting books and
https://www.agro-lib.site/2022/04/blog-post_497.html	Electronic references, websites

Agricultural Machinery and Equipment Course Description Form

Course name .1
Agricultural machinery and equipment
Course code .2
AGEQ232
Semester/Year .3
Second / Second Stage

Date of preparation of this description .4					
1 -10 3 202-					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3.5 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name Abbas Abdul Hussein Mishal and Mustafa Fadel Hussein :Email mustafa.almoosa@uobasrah.edu.iq abbas.mishall@uobasrah.edu.iq					
Course objectives .8					
• Study the types of agricultural machines and equipment used in agricultural fields, how to use and maintain them, identify the components of each machine and its field of use, and identify the modern machines used in the			Course objectives		
Teaching and learning strategies .9					
.weeks of in-person lectures, including two monthly exams and daily exams 15			Strategy		
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam And report	Lecture with explanation, presentation	Agricultural tractors, their specifications, requirements and .classifications	Classification of tractors and determination of the necessary		1
Daily exam And report	Lecture with explanation, presentation	Installation of agricultural bulldozers and all mechanical parts	Analyze the components of the bulldozer and understand		2
Daily exam And report	Lecture with explanation, presentation	Internal combustion engine (its structure, the function of each part, the thermal cycle of the .(engine	Explanation of the engine operating cycle and the		3
Daily exam And report	Lecture with explanation, presentation	.Power and drag measurements	Calculating and analyzing drag force and the factors		4
Daily exam And report	Lecture with explanation, presentation	Primary soil preparation .machines	Learn about the types of plows and their role in .soil preparation		5

Daily exam And report	Lecture with explanation, presentation	Special machines for soil .preparation	Identify special machines and analyze their .use as needed		6
Daily exam And report	Lecture with explanation, presentation	Secondary soil preparation machines and their uses	Understanding the mechanisms of smoothing and		7
Daily exam And report	Lecture with explanation, presentation	Soil planning, soil leveling and .amendment machines	Explaining planning and settlement methods and		8
Daily exam And report	Lecture with explanation, presentation	.Fertilizing machines	Identify types of fertilizer machines and fertilizer		9
Daily exam And report	Lecture with explanation, presentation	Agricultural and sowing .machinery	Explaining the mechanism of seeding machines and		10
Daily exam And report	Lecture with explanation, presentation	Mechanical control machines .for shrubs and agricultural pests	Understanding the role of machines in controlling		11
Daily exam And report	Lecture with explanation, presentation	Chemical control machines for weeds, pests and agricultural .diseases	Explanation of spraying equipment and disease and pest		12
Daily exam And report	Lecture with explanation, presentation	Field performance measurements of agricultural .machinery	Conduct efficiency calculations and analyze		13
Daily exam And report	Lecture with explanation, presentation	irrigation machines	Classification of irrigation machines by type and their		14
Daily exam And report	Lecture with explanation, presentation	Harvesting machines	Learn about harvesting machines, their components,		15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Daily exam And report	Lecture with explanation, presentation and	Types of agricultural tractors	Distinguish between the types of pullers and their uses	3	1
Daily exam And report	Lecture with explanation, presentation	Types of internal combustion engines	Classification of engines according to cycle type and	3	2
Daily exam And report	Lecture with explanation, presentation	Engine parts	Disassemble the main parts of the engine and determine	3	3
Daily exam And report	Lecture with explanation, presentation	Soil preparation equipment and tillage recipes	Operate tillage equipment and analyze its performance in	3	4
Daily exam And report	Lecture with explanation, presentation	Primary soil preparation equipment	Identifying and Using Plow Attachments	3	5
Daily exam And report	Lecture with explanation, presentation	Secondary soil preparation equipment	Operate crushing and leveling equipment and	3	6
Daily exam And report	Lecture with explanation, presentation	Leveling and land modification equipment	Using laser or traditional methods to level the ground	3	7
Daily exam And report	Lecture with explanation, presentation	Field planning and division machines	Implementation of planning operations using	3	8
Daily exam And report	Lecture with explanation, presentation	Fertilization machines	Adjust the fertilizer machine and distribute the	3	9
Daily exam And report	Lecture with explanation, presentation	Agricultural and seed equipment	Practical experiment for planting seeds at specific	3	10
Daily exam And report	Lecture with explanation, presentation	Mechanical pest control equipment	Practical application of pest control without using	3	11
Daily exam And report	Lecture with explanation, presentation	Chemical control equipment	Calibrate the sprayer and implement an efficient and	3	12

Daily exam And report	Lecture with explanation, presentation	Special machines and mechanical assembly	Practical application for assembling equipment	3	13
Daily exam And report	Lecture with explanation, presentation	Irrigation machinery and equipment	Operating and checking the efficiency of irrigation	3	14
Daily exam And report	Lecture with explanation, presentation	Harvesting machines	Operating the harvester and measuring the loss and	3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Al-Tahhan, Yassin Hashim and Mohammed Jassim Al-Nima Agricultural Machinery and Equipment. Ministry of .(1988)	Required textbooks (methodology if (available
Al-Banna, Aziz Ramo (1990). Soil preparation equipment. Ministry of Higher Education and Scientific Research. .University of Mosul. Iraq	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form Plant Physiology

Course name .1
Plant physiology
Course code .2
PLPH220
Semester/Year .3
Second / Second Stage
Date of preparation of this description .4
1-2-202 4
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6

hours (2 theoretical + 3 practical) 3.5 units 5

Name of the course supervisor (if more than one name is mentioned) .7

:Name :Prof. Dr. Majid Abdel Hamid Ibrahim Email majid.abdulhameedl@uobasrah.edu.iq

Course objectives .8

• The study of plant physiology and the interpretation of biological phenomena and processes occurring within plant cells and tissues on physical and chemical The relationship between physiological . grounds processes, the functions of plant organs, and the	Course objectives

Teaching and learning strategies .9

.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	Plant Physiology and Definition - The Importance of Water in Plant Life	Definition of plant physiology and	2	1
Daily exam	Lecture with presentation	Definition of solution - Types of solutions - General properties of colloidal solutions	Classification of solutions and understanding	2	2
Daily exam	Lecture with presentation	Definition of diffusion and its types - Factors affecting diffusion - Osmosis	Explaining the mechanisms of material	2	3
Daily exam	Lecture with presentation	The relationship of water to living cells - plasmid and its types - imbibition	Analysis of plant cell reaction to	2	4
Daily exam	Lecture with presentation	Transpiration - Methods of measuring transpiration in plants - Mechanism of closing	Understanding the process of transpiration	2	5
Daily exam	Lecture with presentation	Factors affecting the rate of transpiration and the opening and closing of stomata in	Analysis of the impact of the internal and	2	6
Daily exam	Lecture with presentation	Theories that explain the mechanism of opening and closing stomata in leaves	Comparison between different	2	7
Daily exam	Lecture with presentation	Excretion processes in plants	Distinguish between plant waste and its	2	8
Daily exam	Lecture with presentation	Absorption and movement of water through xylem tissue	Explaining water transport in vascular	2	9

Daily exam	Lecture with presentation	Food transport through phloem tissue	Describe the mechanism of transport of	2	10
Daily exam	Lecture with presentation	photosynthesis	Explaining the steps of photosynthesis	2	11
Daily exam	Lecture with presentation	Types of plant dyes	Learn about the types of pigments and	2	12
Daily exam	Lecture with presentation	The mechanism of light energy acquisition in plants	Analyzing how plants capture light energy	2	13
Daily exam	Lecture with presentation	Cellular respiration in plants	Explaining the steps of respiration in	2	14
Daily exam	Lecture with presentation	Physiology of plant growth and development	Distinguish between the stages of	2	15
Practical part					
Evaluation method	Lecture with presentation	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Introduction to Plant Physiology	Learn the principles of physiology and	3	1
Daily exam	Lecture with presentation	.Plant cell	Distinguish cell components and functions	3	2
Daily exam	Lecture with presentation	Types of solutions in nature	Prepare different solutions and	3	3
Daily exam	Lecture with presentation	Methods of measuring solutions	Conducting experiments on water transport	3	4
Daily exam	Lecture with presentation	Osmosis	Explain the behavior of materials inside	3	5
Daily exam	Lecture with presentation	osmotic pressure	Comparison of membranes according to	3	6
Daily exam	Lecture with presentation	.Spread	Measuring transpiration and analyzing	3	7
Daily exam	Lecture with presentation	.Absorption	Conducting an experiment to monitor	3	8

Daily exam	Lecture with presentation	Types of cell membranes	Extraction and separation of chlorophyll and	3	9
Daily exam	Lecture with presentation	transpiration	Watching plant responses to environmental	3	10
Daily exam	Lecture with presentation	photosynthesis	Enhance practical understanding	3	11
Daily exam	Lecture with presentation	Plant dyes and methods of their separation	Learn the principles of physiology and	3	12
Daily exam	Lecture with presentation	Sensation and movement in plants	Distinguish cell components and functions	3	13
Daily exam	Lecture with presentation	Experiences Preparing different types of .1 solutions	Prepare different solutions and	3	14
Daily exam	Lecture with presentation	Diffusion experience .4 Chlorophyll separation .5	Conducting experiments on water transport	3	15

Course Evaluation .11

for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50

Learning and teaching resources .12

	Required textbooks (methodology if available)
1. Introduction (Plant Physiology), 1985, by Yaakov Levitt, .translated by Dr. Asim Mahmoud Hussein 2. Plant Physiology, 1987, Part One, by Dr. Abdul Hadi Jawad .Al-Rayyes and Dr. Abdul Azim Kazim 3. Plant Physiology, 1987, Part Two, written by Dr. Abdul .Azim Kazim and Dr. Abdul Hadi Jawad Al-Rayyes 4. Photosynthesis, 1983, by Dr. Abdul Muttalib Sayed .Mohammed 5. Physiology of Flowering Plants, 1984, by H. A. Street and H. Obeke, translated by Haibat Faiq Al-Mudarris and Faiza .Aziz Mahmoud Al-Ali 6. Practical Plant Physiology, 1980, authored by Dr. Hussein	Main References (Sources)
*Taiz, L., Zeiger, E., Møller, I. M., & Murphy, A. (2015). Plant physiology and development (No. Ed. 6). Sinauer Associates	Recommended supporting books and references (scientific
*Hopkins, W. G. (2008). Introduction to plant physiology. John Wiley & Sons. *Mohr, H., & Schopfer, P. (Eds.). (2012). Plant physiology. Springer Science & Business Media.	Electronic references, websites

land settlement and modification Course description form for

Course name .1
Land settlement and modification
Course code .2
ME207
Semester/Year .3
Second / Second Stage
Date of preparation of this description .4
2024-1-31
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name:Hossam Hassan Abdel-AliEmail husam.abdulaali@uobasrah.edu.iq Name: Issam Mohammed Ali Abdul Karim :Emailissam.abdalkareem@uobasrah.edu.iq

Course objectives .8	
• Realizing the importance of leveling and modifying agricultural lands and their impact on agricultural .production • How to use and calculate the amount of leveling and .adjustment equipment for different areas • Mapping, plotting points on them, and calculating the .amount of soil needed for cutting and backfilling • Knowing how to deal with the land in terms of levels, longitudinal and transverse sections, and grid	Course objectives

Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Daily exam	Lecture with presentation	Introduction, historical overview, related sciences, importance in agricultural affairs, objectives of .settlement and land modification	Learn about the origins of settlement and adjustment and their	2	1
Daily exam	Lecture with presentation	Types of settlement, criteria for selecting the type, application requirements	Determine the types of settlement and choose the most	2	2
Daily exam	Lecture with presentation	Things and factors that must be followed before starting the leveling and adjustment work: ,soil factors Environmental and plant factors	Analysis of factors affecting the success of settlement	2	3
Daily exam	Lecture with presentation	Topographic variation: its relationship to settlement and adjustment, estimation methods, ,direct methods, indirect methods Preparing maps, interpreting	Evaluation of topographic variation using different methods	2	4
Daily exam	Lecture with presentation	Land modification without slope: importance, methods of use, purposes	Understand the use of maps to guide editing .processes	2	5
Daily exam	Lecture with presentation	Field work, implementation methods, work stages, calculations and estimates, evaluation and assessment	Flat land modification application for multiple agricultural purposes	2	6
Daily exam	Lecture with presentation	Single slope land modification: importance, uses, purposes, field ,work, implementation methods .Work stages	Implementation and practical evaluation of settlement	2	7
Daily exam	Lecture with presentation	Accounts and Estimates, Valuation and Evaluation	Implementation of modifications on lands with a	2	8
Daily exam	Lecture with presentation	Two-slope land modification: importance, uses, purposes, field ,work, implementation methods Work stages	Use special methods to modify land with two slopes	2	9
Daily exam	Lecture with presentation	Accounts and estimates, .evaluation and valuation	Understand and perform calculations on field data	2	-11 10

Daily exam	Lecture with presentation	Selection of machines and equipment: types of machines, selection criteria, operational efficiency of machines, optimal .choice curve	Choosing the right equipment for efficient grading	2	12
Daily exam	Lecture with presentation	Laser leveling and modification .strategies	Using laser technology to improve leveling	2	13
Daily exam	Lecture with presentation	Settlement and adjustment plan, topographical factors, human factors, water resources	Preparing a comprehensive plan for the success of	2	14
Daily exam	Lecture with presentation	Nature and types of machines and equipment, adjustment times (summer, winter). Ways to .success	Understanding field work mechanics and the timing of implementing reclamation and	2	15
Practical part					
Report and discuss the results	Lecture with explanation and practical	:Settlement works ▪ Finding natural ground levels in the field ▪ Device level method Rise and fall method	Accurately measure ground levels using surveying .equipment	3	1
Report and discuss the results	Lecture with explanation and practical application	Longitudinal section works	Drawing and analyzing sections (longitudinal) to understand the terrain	3	2
Report and discuss the results	Lecture with explanation and practical	Cross-sectional works	Drawing and analyzing sections (cross sections) to understand the	3	3
Report and discuss the results	Lecture with explanation and	Network budget works	Create a network to measure level differences	3	4
short exam	Lecture with the use of visual aids (available)	:Topographic maps ▪ Preparing topographic maps ▪ Contour lines Methods of drawing elevation maps with exercises on how to	Preparing and drawing accurate topographic maps	3	6-5
duty	Lecture with the use of visual aids	:Leveling machines ▪ Types of leveling machines The importance of each type in	Learn about leveling equipment and .its field uses	3	7

duty	Lecture with the use of visual aids	:Survey maps ▪ Its uses Signs and terms used in maps	Understanding map symbols for use in editing work	3	8
duty	Lecture with the use of visual aids (available)	:Electronic distance measurement ▪ Devices used according to the classification followed ▪ How do measuring ?devices work	Using modern devices to accurately measure distances	3	10-9
duty	Lecture with explanation of methods and solution of practical	:Area calculation ▪ Area estimation sources ▪ :Methods for finding areas ➢ regular shapes ➢ irregular shapes Mechanical methods (planimeter)	Finding areas using mathematical and mechanical methods	3	11
short exam	Lecture with explanation of methods and	:Coordinate systems ▪ Geographic coordinate system ▪ spatial coordinate system ▪ orthogonal plane	Application of coordinate systems to accurately determine	3	13-12
duty	Lecture with explanation of methods and solution of	:Calculate deviations ▪ Learn about the types of deviations, their .importance and uses ▪ Finding the relationship between the actual	Understanding types of deviations and their use in guidance and settlement	3	15-14

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Land Engineering, d. Munir Aziz Morcos, Cairo University, / Faculty of Agriculture, 1990.	Required textbooks (methodology if (available
flat area. Written by Faridoun. faculty of agriculture. University of Basra, 1987 .	Main References (Sources)
Machines and equipment for soil reclamation and leveling, d. Najeeb Abdel Halim Hindawi / Agricultural Engineering, Makki Majeed Aboud Al-Shakarji / Agricultural Engineering,	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form: Soil, Plant and Water Analysis

Course name .1
Soil, plant and water analysis
Course code .2

T 202
Semester/Year .3
Second / Second Stage
Date of preparation of this description .4
2024/2/5
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
units 3.5)theoretical + 3 practical 2) 5
Name of the course supervisor (if more than one name is mentioned) .7
Name: Prof. Dr. Mohamed Abdullah Abdul Karim :EmailMohamed .abdulkareem.uobasrah.edu.iq Dr. Raidaa Alawi Hassan

Course objectives .8	
• Learn the basics and methods of soil, . plant and water analysis • How to identify and avoid errors .through analysis	Course objectives
Teaching and learning strategies .9	
.weeks of face-to-face lectures with daily exams and two monthly exams 15	Strategy

Course structure .10

Theoretical part

Evaluation	Learning	Name of the unit or	Required learning outcomes	watches	week
Daily exam	In-person lecture	Introduction to Soil Analysis	The student will be able to explain the importance of soil analysis and identify the types of analyses used to evaluate soil properties and their	2	1
Daily exam	In-person lecture	Accuracy of analysis (sources of error)	The student will be able to distinguish between the types of errors involved in soil analysis, identify their sources, and estimate	2	2
Daily exam	In-person lecture	Laboratory facilities, quality, and data processing	Students will be able to describe the components of laboratory facilities for soil analysis and explain the principles of quality	2	3
Daily exam	In-person lecture	Soil analysis methods/chemical analysis	The student will be able to explain the basic principles of chemical analysis in soil, classify nutrients, and apply laboratory procedures to	2	4

Daily exam	In-person lecture	Methods of automatic analysis	The student can distinguish between the methods of instrumental analysis used in soil laboratories, such as atomic	2	5
Daily exam	In-person lecture	Automated analysis methods	The student can distinguish between the methods of instrumental analysis used in soil laboratories, such as atomic	2	6
Daily exam	In-person lecture	Electrical conductivity and potential analysis	The student will be able to explain the principle of measuring electrical conductivity and electrical potential in soil samples	2	7
Daily exam	In-person lecture	Organic matter estimation	The student will be able to apply laboratory methods to estimate the organic matter content in soil and .analyze its effect on soil properties	2	8
Daily exam	In-person lecture	organic matter fractionation	The student is able to distinguish the components of organic matter through different fractionation techniques and explain the role of	2	9
Daily exam	In-person lecture	Methods for estimating the exchange capacity of cations	The student is able to explain the concept of soil cation exchange capacity, apply various laboratory methods to estimate it, and interpret its relationship to soil fertility and	2	10
Daily exam	In-person lecture	EC andpH estimation	The student is able to measure soil salinity and reactivity using appropriate laboratory tools and techniques and analyze their effect on soil nutrient availability	2	11
Daily exam	In-person lecture	lime estimation	The student is able to determine the total carbon content of soil using laboratory methods and explain its	2	12
Daily exam	In-person lecture	Gypsum estimation	The student is able to estimate the gypsum content in soil using analytical techniques and evaluate .its effect on soil properties	2	13
Daily exam	In-person lecture	Plant sample analysis	The student is able to identify the basic components of plant genes and use laboratory methods to analyze nutrients and interpret the results	2	14
Daily exam	In-person lecture	Water analysis	The student will be able to apply water analysis techniques to determine physical and chemical properties and evaluate the suitability of water for irrigation purposes based on approved	2	15
Practical part					

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	a lecture	Taking soil samples and preparing them for analysis	The student will be able to accurately describe the steps of taking soil samples and apply the correct methods for preparing	3	1
Daily exam	a lecture	Plant sampling	The student is able to explain the scientific basis for taking plant samples and choose appropriate	3	2
Daily exam	a lecture	Water sampling	The student is able to explain the steps for taking water samples in a scientifically correct manner and use the appropriate tools to ensure	3	3
Homework	a lecture	Expressing the concentrations of solutions and how to prepare them	The student will be able to distinguish between methods of expressing the concentration of solutions, such as malar and normal, and prepare solutions according to	3	4
Daily exam and report	a lecture	Preparation of extracts and measurement ofpH andEC	The student will be able to measure soil acidity and salinity using various methods, understand the scientific basis of measuring	3	5
Daily exam	a lecture	Cation exchange capacity(CEC)	The student is able to explain the concept of cation exchange	3	6
		monthly exam	--	3	7
a report	a lecture	Organic carbon estimation	The student masters the practical steps for estimating organic matter in soil and explains its role in improving chemical properties that	3	8
a report	a lecture	Estimation of available nitrogen	The student will be able to estimate the amount of available nitrogen in the soil using appropriate practical	3	9
a report	a lecture	Estimation of ready phosphorus	The student will be able to explain the importance of available	3	10
a report	a lecture	Ready potassium estimation	The student will be able to estimate the amount of available potassium	3	11
Daily exam and report	a lecture	Estimation of total soil carbon content	The student will be able to explain the role of carbonates in soil properties, estimate their percentage using laboratory	3	12

a report	a lecture	Water sample analysis estimation of) physical or chemical (properties	The student will be able to identify and measure the physical and chemical properties of water ,samples such as turbidityTDS , TSS ,TS pH, and total salinity , using scientific instruments and	3	13
a report	a lecture	Estimation of the elemental content of plant samples	The student will be able to accurately measure the element content in plant samples and explain the role of each element in .plant growth and characteristics	3	14
		monthly exam	exam	3	15

Course Evaluation .11	
.Two monthly exams worth 40 marks, with daily exams and attendance worth 10 marks	
Learning and teaching resources .12	
nothing	Required textbooks (methodology if (available
Chemical analysis of soil. Written by Dr. Hamdallah Suleiman Rahi, Dr. Ismail Ibrahim Khadir and .Muhammad Ali Jamal Al-Ubaidi 2000 Handbook 60, 1956, USDA	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course description form for theoretical agricultural guidance

Course name .1
Theoretical agricultural guidance
Course code .2
AGEX213
Semester/Year .3
Chapter Two / Second Stage
Date of preparation of this description .4
2024-2-4

Available forms of attendance .5	
My presence in Hall No. 2	
Number of study hours (total) / Number of units (total) .6	
hours per week 2 units 2	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name Asst. Prof. Dr. Abdul Amir Rahim Obaid :Email_ abdulameer.obaid@uobasrah.edu.iq	
Course objectives .8	
• Learn about agricultural extension science • Identify the objectives of agricultural guidance • Identifying the problems prevailing in the Arab countryside and the contribution of agricultural extension in solving them • Transferring scientific research results to the	Course objectives
Teaching and learning strategies .9	
The course includes (2) theoretical hours - the number of weekly hours is approved .and distributed over 15 weeks	Strategy
Course structure .10	
Theoretical part	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
display screen	Lecture with explanation and	Agricultural extension and its impact on the development of rural communities	Understanding the role of guidance in improving rural reality	2	1
display screen	Lecture with explanation and	The role of agricultural extension in development and combating	Recognizing mentoring as a tool for development and social change	2	2
display screen	Lecture with explanation and	Agricultural Extension Science, Its Philosophy and Objectives	Understanding the theoretical and intellectual foundations of	2	3
display screen	Lecture with explanation and	General principles in agricultural extension	Knowing the basic principles on which guidance work is based	2	4
display screen	Lecture with explanation and	Various factors affecting agricultural guidance	Analysis of the influencing environmental, economic and social	2	5

display screen	Lecture with explanation and	Agricultural extension activity and its development	Trace the stages of development of agricultural guidance over time	2	6
Projection screen + whiteboard	Lecture with explanation and	Agricultural extension systems and regulations	Learn about the organizational structure of guidance and its	2	7
display screen	Lecture with explanation and	Types of agricultural guidance	Distinguish between different types of counseling by style and scope	2	8
display screen	Lecture with explanation and	Characteristics of a successful agricultural guide	Knowing the professional and personal qualities required of a guide	2	9
display screen	Lecture with explanation and	Agricultural guide qualifications	Identify the skills and knowledge needed for success .in counseling	2	10
display screen	Lecture with explanation and	Duties and tasks of the agricultural guide	Familiarity with the duties and role of the guide in the agricultural field	2	11
display screen	Lecture with explanation and	Planning guidance programs and evaluating their results	Acquire skills in preparing and evaluating guidance programs	2	12
display screen	Lecture with explanation and	Foundations of planning guidance programs	Understanding the steps of scientific planning for guidance programs	2	13
a report	------	Scientific trip	------	2	14
------	------	exam	------	2	15
Course Evaluation .11					
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, .daily, oral, monthly and written exams, reports, etc					
Learning and teaching resources .12					
			Required textbooks (methodology if available)		

Al-Samarrai, Hatem Ali- Agricultural Extension and its Role in Rural Development- 1975 - Mander, Addison Doe, translated by Abbas Abdul Mohsen-- Agricultural Guidance / Part 1-- 1983 -- K	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description: Design and Analysis of Agricultural Experiments

Course name .1	
Design and analysis of agricultural experiments	
Course code .2	
DAEX327	
Semester/Year .3	
First - Third Stage	
Date of preparation of this description .4	
2025 - 01 - 20	
Available forms of attendance .5	
My presence	
Number of study hours (total) / Number of units (total) .6	
hours (2 theoretical + 3 practical) 3.5 units 5	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name Ali Hamdi Diab Mohsen Naseh Hawshan :Email mohsin.hoshan@uobasrah.edu.iq	
Course objectives .8	
• The importance of designing agricultural experiments and how to collect data • Single-factor agricultural experiment designs • Global carpentry	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	General definitions in statistics - basic rules for designing and analyzing types of - experiments agricultural experiments - components of an experiment	Students learn general definitions in statistics - basic rules for designing and analyzing - experiments types of agricultural experiments - components of an experiment	hours 2	the first
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Completely randomized design	Students learn about a completely randomized .design	hours 2	the second
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Averages test	Students learn about the average .test	hours 2	the third
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Randomized Complete Block Design	Students learn about randomized complete block .design	hours 2	Fourth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Complete random sector design in case of missing one or more observations	Students learn about the design of randomized complete sectors in the event of one or more missing .observations	hours 2	Fifth
nothing	nothing	First semester exam	nothing	hours 2	Sixth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Relative efficiency of the randomized complete block design compared to the completely randomized design	Students learn about the relative efficiency of a randomized complete block design compared to a completely randomized .design	hours 2	Seventh

Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Latin square design	Students learn about the Latin .square design	hours 2	The eighth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Latin square design in case of missing one or more views	Students learn the Latin square design in case one or more views are .missed	hours 2	Ninth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Relative efficiency of the Latin square design compared to the completely randomized design and the completely randomized block design	Students learn about the relative efficiency of the Latin square design compared to the completely randomized design and the completely randomized block .design	hours 2	10th
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Factorial experiments with a completely randomized design with two and three factors	Students learn about factorial experiments with completely randomized designs with two .and three factors	hours 2	eleventh
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Factorial experiments with two-factor and three-factor randomized complete block designs and Latin square designs	Students learn about factorial experiments with two-factor and three-factor randomized complete block designs and the Latin square .design	hours 2	twelfth
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Design of split panels according to the completely random design	Students learn about the design of split panels according to the completely randomized .design	hours 2	thirteenth
Oral discussion and questions	• For the theoretical lecture • Presentation Group discussion	Design of split panels according to the complete random sector design	Students learn about split-panel design according to the complete randomized sector .design	hours 2	fourteenth

Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Correlation and simple regression	Students learn about correlation and simple .regression	hours 2	fifteenth
Practical part					
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of statistical symbols and measures of .centering and dispersion	Students solve and discuss examples of statistical symbols and measures of centering and .dispersion	hours 3	the first
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of completely .randomized design	Students solve and discuss examples of completely randomized .design	hours 3	the second
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of the average test (least significant difference test and (Duncan's test	Students solve and discuss examples of average tests (least significant difference test and .(Duncan test	hours 3	the third
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of randomized .complete sector design	Students solve and discuss examples of randomized complete block .design	hours 3	Fourth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of complete random sector design in the case of missing one or .more observations	Students solve and discuss examples of complete randomized sector design in the case of missing one or .more observations	hours 3	Fifth
nothing	nothing	First semester exam	nothing	hours 3	Sixth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of the relative efficiency of the randomized complete block design compared to the completely .randomized design	Students solve and discuss examples of the relative efficiency of a randomized complete block design compared to a completely	hours 3	Seventh

			randomized .design		
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples about the Latin square	Students solve and discuss examples of the .Latin square	hours 3	The eighth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of Latin square design in case one or more views are lost	Students solve and discuss examples of Latin square design in case one or more views are .missing	hours 3	Ninth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of the relative efficiency of the Latin square design compared to the completely randomized design and the completely randomized .block design	Students solve and discuss examples of the relative efficiency of the Latin square design compared to the completely randomized design and the completely randomized block .design	hours 3	10th
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of factorial experiments according to the completely randomized design with two and three factors	Students solve and discuss examples of factorial experiments using a completely randomized design with two .and three factors	hours 3	eleventh
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of factorial experiments according to the two-factor and three-factor randomized complete block design - and the Latin square design	Students solve and discuss examples of factorial experiments using two-factor and three-factor randomized complete block designs and the Latin square .design	hours 3	twelfth
Oral discussion	• Practical lecture • Presentation	Solve and discuss examples of split-panel	Students solve and discuss examples of split-	hours 3	thirteenth

and questions	Group discussion	design according to the .completely random design	plane design according to the completely randomized .design		
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of split-panel design according to the complete random sector .design	Students solve and discuss examples of split-panel design according to the randomized complete sector .design	hours 3	fourteenth
Oral discussion and questions	• Practical lecture • Presentation Group discussion	Solve and discuss examples of correlation .and simple regression	Students solve and discuss examples of correlation and .simple regression	hours 3	fifteenth

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Design and Analysis of Agricultural Experiments. Khashe' Al-Rawi and Abdul Aziz Khalaf Allah. Mosul University .Press, 1980	Required textbooks (methodology (if available
Applications in Experimental Design and Analysis, Medhat Al-Sahouki and Karima Mohamed Wahib, Dar Al-Hikma for Printing and Publishing, 1990 1-	Main References (Sources)
	Recommended supporting books and references (scientific (...journals, reports
	Electronic references, websites

Course Description Soil Physics

Course name .1
Soil Physics
Course code .2
SPHY338

Semester/Year .3
First - Third Stage
Date of preparation of this description .4
1 -10 3 202-
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name .DrMohammed Ahmed Kazim :Emailmohammed.ahmed@uobasrah.edu.iq
Course objectives .8

• Understanding the concept of soil physics • Main components of soil • The most important physical properties of soil • Estimation of some physical properties of soil • Some concepts of practical soil physics	Course objectives

Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation	General introduction, physical properties of soil	To introduce the student to soil physics and	2	1
Daily exam	Lecture with explanation	Main components of soil	The student should list the solid, liquid and gaseous	2	2
Daily exam	Lecture with explanation	Volumetric and mass relationships of soil components	The student will perform density, voids and porosity	2	3
Daily exam	Lecture with explanation	Physical properties of soil	The student should be able to distinguish	2	4

Daily exam	Lecture with explanation	soil surface area	The student should explain the concept of specific	2	5
Daily exam	Lecture with explanation	Soil construction and aggregate stability	The student will know the structure of soil, compare	2	6
Daily exam	Lecture with explanation	Mechanical properties of soil	The student will analyze the behavior of soil	2	7
Daily exam	Lecture with explanation	Dynamic properties of soil	The student should explain the movement of air	2	8
Daily exam	Lecture with explanation	surface hardening, soil compaction, soil hardening	The student should explain the causes and negative	2	9
Daily exam	Lecture with explanation	soil water, soil water efforts	The student will be able to distinguish between the types	2	and 10 11
Daily exam	Lecture with explanation	Quantitative expressions for soil water potential	The student will use various mathematical	2	12
Daily exam	Lecture with explanation	Soil moisture characteristic curve	The student will explain the relationship	2	13
Daily exam	Lecture with explanation	soil air	The student should explain the components of soil	2	14
Daily exam	Lecture with explanation	soil temperature	The student should explain how heat is transferred in the	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation	The effect of soil texture differences on water retention and methods of	The student will compare the amount of water	3	1
Daily exam	Lecture with explanation	Analysis of soil particle sizes using sieves, hydrometers and pipettes	The student classifies the soil according to its	3	and 3 2
Daily exam	Lecture with explanation	Analysis of soil aggregate sizes and estimation of their stability using wet sieving	The student will evaluate the stability of soil	3	and 5 4
Daily exam	Lecture with explanation	Measuring apparent and true soil density and calculating total porosity	The student measures the apparent and true	3	6

Daily exam	Lecture with explanation	Estimation of moisture description curve for soils of different textures	The student will create a moisture curve for different	3	and 8 7
Daily exam	Lecture with explanation	Measurement of saturated water conductivity in homogeneous soil columns	The student must determine the rate of water transfer in	3	9
Daily exam	Lecture with explanation	Measuring water penetration in horizontal and vertical soil columns	The student should compare the rates of water flow	3	10
Daily exam	Lecture with explanation	Measuring the specific area of soil material	The student will estimate the specific surface	3	11
Daily exam	Lecture with explanation	Methods for measuring moisture tension and moisture content in soil	The student will use different tools to estimate soil	3	12
Daily exam	Lecture with explanation	soil temperature measurement	The student measures the soil temperature at	3	13
Daily exam	Lecture with explanation	soil aeration measurement	The student conducts tests to measure the	3	and 14 15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Fundamentals of Soil Physics. By Hillel, Daniel. Translated by Dr. .Mahdi Ibrahim Awda. 1990	Required textbooks (methodology if available)
1- Fundamental of soil physics. D. Hillel. 1980. 2- Principles of Soil Physics. Lal ana Shukla. 2004. USA. 3 - Environment of Soil Physics. D. Hillel. 2004.	Main References (Sources)
	Recommended supporting books and references (scientific
	Electronic references, websites

Soil Fertility Course Description

Course name .1
soil fertility Fertilizers and
Course code .2
SOFE311

Semester/Year .3
First / Third Stage
Date of preparation of this description .4
2023/15/9
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
Name: Prof. Dr. Mohamed Abdullah Abdul Karim :Email Mohamed.abdulkareem@uobasrah.edu.iq
Course objectives .8

• Understand the concept of soil fertility and its relationship to productivity • Study of the interactions of nutrients in the soil .and the factors affecting its readiness • Identify mineral and organic fertilizers and their	Course objectives

Teaching and learning strategies .9	
week in-person lectures with two monthly exams and daily exams-15	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	In-person lecture	Nutrients and their classification	Identify the nutrients essential for plants	2	1
Oral exam	In-person lecture	Soil fertility and factors affecting it	Identify the soil properties that affect its .fertility	2	2
Oral exam	In-person lecture	Ways for nutrients to reach the root	Comparison of methods for accessing the element to the root	2	3
Daily exam	In-person lecture	The relationship between productivity and soil fertility	Addressing the mathematical equations that describe the relationship between the limiting factor of growth and production	2	4

Daily exam	In-person lecture	Soil nitrogen and fertilizer	Identify nitrogen sources and their interactions in .the soil	2	5
Oral exam	In-person lecture	Soil nitrogen and fertilizer	Learn about nitrogen fertilizers and how to add them	2	6
Daily exam	In-person lecture	Soil and fertilizer phosphorus	Identify phosphorus sources and their .interactions in soil	2	7
Oral exam	In-person lecture	Soil and fertilizer phosphorus	Learn about phosphate fertilizers and how to add them	2	8
Daily exam	In-person lecture	Potassium	Identifying potassium sources and their interactions in the soil	2	9
	In-person lecture	Potassium + monthly exam	Identifying potassium fertilizers and their interactions in the soil	2	10
Daily exam	In-person lecture	sulfur, calcium, and magnesium	Study of the sources and interactions of sulfur, calcium, and magnesium in soil	2	11
Daily exam	In-person lecture	Zinc, copper, and manganese	Study of the sources and interactions of zinc, copper, and manganese in soil	2	12
Daily Exam 14	In-person lecture	Iron and boron	Study of the sources and interactions of iron and boron in soil	2	13
		Scientific trip	Scientific trip		14
Daily exam	In-person lecture	Organic fertilizers	The role of organic fertilizers in the soil and their types	2	15
The practical part					
practical report	In-person lecture	Calculating the amount of fertilizer added to conduct a fertility experiment	Learn how to convert the concept of compost level into fertilizer	3	2-1
practical report	In-person lecture	Foundations and rules of fertility survey	Learn the steps of a fertility scan	3	3
		Soil fertility calendar	Identify the characteristics necessary for soil fertility .assessment	3	4
Daily exam + practical report	In-person lecture	Descriptive tests for nitrogen fertilizers	Identify the properties of nitrogen fertilizers and their relationship to .availability	3	5

practical report	In-person lecture	Nitrogen Readiness Guide	Learn about nitrogen extraction methods and their relationship to .growth	3	6
practical report	In-person lecture	Descriptive tests for phosphate fertilizers	Study of the properties of phosphate fertilizers and their relationship to availability	3	7
Daily exam + practical report	In-person lecture	Phosphorus Readiness Guide	Learn about methods of extracting phosphorus and .its relationship to growth	3	8
practical report	In-person lecture	Descriptive tests for potassium fertilizers	Identify the properties of potassium fertilizers and their effect on readiness	3	9
practical report	In-person lecture	Potassium Readiness Guide	Study of potassium extraction methods and its relationship to growth	3	10
			Scientific trip	3	11
Daily exam + practical report	In-person lecture	Micronutrient Readiness Guide	Methods of extracting ready-made trace elements and their relationship to growth	3	12
practical report	In-person lecture	Plant analysis and fertility calendar	Learn how to take a plant sample and prepare it for .analysis	3	13
exam	exam	exam	exam	3	14
Discussion of the report	Discussion of the report	Discussion of the experimental report	Discussion of experimental reports		15

Course Evaluation .11	
.Two monthly exams worth 40 points, with daily exams and attendance worth 10 points Practical exam of 20, monthly exam of 10, practical experience reports of 10	
Learning and teaching resources .12	
Fertilizers and soil fertility. Dr. Kazem Mashhout Awad .1987 Practical tests of fertilizers and soil fertility - Dr. Kazem Mashhout Awad 1984	Required textbooks (methodology if (available
Prasad,R. and Power, 1997. soil fertility management for sustainable agriculture.	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Soil and Water Pollution Course Description

Course name .1
Soil and water pollution / theoretical
Course code .2
SWP314
Semester/Year .3
First semester / 2024-2025
Date of preparation of this description .4
2025/01/02
Available forms of attendance .5
Attendance in classrooms
Number of study hours (total) / Number of units (total) .6
hours per week / 2 units 2
Name of the course supervisor (if more than one name is mentioned) .7
:Name Prof. Dr. Najla Japer Mohammed :Emailnajla.japer@uobasrah.edu.iq
Course objectives .8

✓ Teaching students to recognize all types of .environmental pollution ✓ Study the most important causes of ozone layer .depletion and the increase in carbon dioxide levels ✓ Defining the phenomenon of desertification, the decline of agricultural land, and the encroachment of the desert .on vast areas of agricultural land ✓ Reducing the accumulation of mineral and organic chemicals, elements, and reaction products to limit their .impact on biological processes in the environment • Reducing biological contamination by microorganisms	Course objectives

Teaching and learning strategies .9

• Theoretical lectures in classrooms. • Presentations and video materials. • Group discussions. • Learning based on problem solving, inquiry and brainstorming. • Report and project based learning.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Environmental components	Students will be able to identify the basic aspects of environmental	hours 2	the first
Report on the most suitable and locally used production units	• Theoretical lecture • Presentation • Group	Definition of environment	Students will be able to distinguish between the most	hours 2	the second
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Causes and sources of environmental pollution	Students will be familiar with the most important environmental	hours 2	the third
Earthen pond design project	• Theoretical lecture • Presentation • Group	Soil pollution, types of soil pollution - Movement of chemical and	Students will be familiar with the most important .soil pollutants	hours 2	Fourth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	radioactive contamination	Students will be able to identify the most important	hours 2	Fifth
Cage design project	• Theoretical lecture • Presentation • Group	Scientific methods for treating soil .pollution	Students will be familiar with modern methods and techniques	hours 2	Sixth
nothing	nothing	First month exam	nothing	hours 2	Seventh
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Scientific methods for treating soil pollution	Students will be familiar with modern methods and ways of	hours 2	The eighth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Surface and groundwater pollution and its :types	Students will be able to identify the types of water .in nature	hours 2	Ninth

Comparison report between closed culture systems, aquaponics, and biofloc	• Theoretical lecture • Presentation • Group	Oil resources, agricultural resources	Students will be able to identify the sources of oil .pollutants	hours 2	tenth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Home sources Damage caused by soil pollution	Students will be able to identify the effects of pollution on the	hours 2	eleventh
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Chemical pollution and confiscation	Students will be able to identify chemical .pollutants	hours 2	twelfth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Physical pollution .and confiscation	Students will be able to identify physical .pollutants	hours 2	thirteenth
nothing	nothing	Second months exam	nothing	hours 2	fourteenth
nothing	• Group discussion • Answering students'	A scientific trip to a polluted area	nothing	hours 2	fifteenth

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, .daily, oral, monthly and written exams, reports, etc
marks for attendance, participation and answering oral questions 5
marks for reports and projects 5
marks for the first monthly exam 10
marks for the second monthly exam 10
marks for the final exam 30
Total 60 points
degrees for the practical part 40

Learning and teaching resources .12

Required textbooks (methodology if (available	There is no textbook
Main References (Sources)	3- Richards, A. (1954). Diagnosis and Improvement of Saline and Alkali Soils Agriculture. Hand book No. 60. USDA Washington 4-Pescod, M. B. (1992). Wastewater treatment and use in agriculture FAO Irrig Drain. Paper 47. FAO, Rome

Farid Majeed and Fadel Ahmed Shehab. 2008. Soil Pollution. Al-Yazouri Scientific Publishing and .Distribution House, Amman, Jordan	Recommended supporting books and references (scientific journals, reports...)
https://www.fao.org/soil/ar	Electronic references, websites

Course name .1	
Practical soil and water pollution	
Course code .2	
SWP314	
Semester/Year .3	
First semester / 2024-2025	
Date of preparation of this description .4	
2025/01/02	
Available forms of attendance .5	
Attendance in the laboratory and field visits	
Number of study hours (total) / Number of units (total) .6	
Three hours per week / one and a half (1.5) units	
Name of the course administrator (if more than one name is mentioned) .7	
Name: M.D. Baida Hamid	
Course objectives .8	
✓ Teaching students to recognize all types of .environmental pollution ✓ Study the most important causes of ozone layer .depletion and the increase in carbon dioxide levels ✓ Defining the phenomenon of desertification, the decline of agricultural land, and the encroachment of .the desert on vast areas of agricultural land ✓ Reducing the accumulation of mineral and organic chemicals, elements, and reaction products to limit .their impact on biological processes in the environment	Course objectives
Teaching and learning strategies .9	

• Practical lectures in the laboratory and field visits. • Presentations and video materials. • Group discussions. • Learning based on problem solving, inquiry and brainstorming. • Report and project based learning.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Oral discussion and questions	• Practical lecture • Presentation • Group	Conducting different pot experiments to	Students will be able to identify the basic aspects of .soil pollution	hours 3	the first
Quick test Students identify the appropriate category for a group of	• Practical lecture • Presentation • Group	Measuring the electrical conductivity and degree of soil	Students will be able to use devices to measure electrical	hours 3	the second
Solve practical problems	• Practical lecture • Presentation • Solving problems	Estimation of positive and negative ions of saturated paste extract of soil	Students will be introduced to the most important methods of analysis and measurement of positive and negative ions in saturated soil paste .extract	hours 3	the third
Discussion between students and between them and the subject teacher or farm	• Explanation by the subject professor • Explanation	Heavy metals are introduced into the soil after	Students will be able to measure heavy elements and their	hours 3	Fourth
Solve practical problems	• Practical lecture • View samples of materials and equipment • Performing	Methods of collecting water samples (surface water, well water, (tap water	Students will be able to collect water samples using correct .scientific methods	hours 3	Fifth
Discussion between students and between them and the subject teacher or farm management in the event of a field visit Or evaluate models	• Explanation by the subject professor • Explanation by farm management in case of	Estimation of chemical properties of water	Students will learn the most important methods of analyzing and measuring positive and negative ions .in water samples	hours 3	Sixth

nothing	nothing	First monthly exam	nothing	hours 3	Seventh
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	Estimation of chemical properties of water	Students will be able to identify the most important methods of analysis and measurement of positive and	hours 3	The eighth
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	Estimation of physical properties .of irrigation water	Students will be introduced to the most important methods of analyzing and measuring the physical properties .of water	hours 3	Ninth
A report discussing the most suitable system for the local environment and the most feasible and usable among the closed culture systems, aquaponics and biofloc	• Practical lecture • Presentation • Video presentations	Estimation of biological properties of irrigation water	Students will be introduced to the most important methods of analyzing the biological .properties of water	hours 3	tenth
Oral discussion and questions	• Practical lecture • Presentation • Video	Biochemical) oxygen demand BOD estimation (	Students will learn the most important methods of analysis and	hours 3	eleventh
Assign students to transport a group of live fish using different .means	• Practical lecture • Presentation • Video	Chemical Oxygen) DemandCOD (Estimation	Students will learn the most important methods of analysis and	hours 3	twelfth
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	(TOC) determination	Students will learn the most important methods of analysis and measurement of oxygen in water	hours 3	thirteenth
nothing	nothing	Second monthly exam	nothing	hours 3	fourteenth
nothing	• Group discussion • Answering students'	Scientific trip	nothing	hours 3	fifteenth
Course Evaluation .11					

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, .daily, oral, monthly and written exams, reports, etc marks for attendance, participation and answering oral questions 5 marks for reports and projects 5 marks for the first monthly exam 5 marks for the second monthly exam 5 marks for the final exam 20 Total 40 points degrees for the theoretical part 60

Learning and teaching resources .12	
There is no textbook	Required textbooks (methodology if available)
Standard method for the examination of water and wastewater (2005). American water public health assoc. American water works assoc. 21 St. ed. New York	Main References (Sources)
- Standard method for the examination of water and wastewater (2005). American water public health assoc water works Assoc. 21 St. ed. New York 3- Richards, A. (1954). Diagnosis and Improvement of Saline and Alkali Soils Agriculture. Hand book No. 60. USDA Washington 4-Pescod, M. B. (1992). Wastewater treatment and use in agriculture FAO Irrig Drain. Paper 47. FAO, Rome	Recommended supporting books and references (scientific journals, reports...)
https://www.fao.orgwater/ar	Electronic references, websites

Course Description Organic Soil

Course name .1
organic soil material
Course code .2
SORM312
Semester/Year .3
First - Third Stage
Date of preparation of this description .4

2023/15/9

Available forms of attendance .5

My presence

Number of study hours (total) / Number of units (total) .6

hours (2 theoretical + 3 practical) 3.5 units 5

Name of the course supervisor (if more than one name is mentioned) .7

:Name :Prof. Dr. Haifa Jassim Hussein Emailhayfaa.hussein@uibasrah.edu.iq
:Dr. Baidaa Alawi Hassan baidaa.hassin@uobasrah.edu.iq

Course objectives .8

• Introduction to soil organic matter and its sources • The origin, definition, preparation and benefits of humus • Definition, preparation and benefits of compost • Organic fertilization • Biofertilization	Course objectives

Teaching and learning strategies .9

.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	Introduction to soil organic matter and its sources The origin and definition of humus A diagram showing the extraction of humic substances from organic .matter		2	1
Daily exam	Lecture with presentation	Electrochemical properties of humic substances		2	2
Daily exam	Lecture with presentation	composition of organic matter in soil Decomposition of non-nitrogen organic compounds decomposition of organic nitrogenous compounds		2	3
Daily exam	Lecture with presentation	Nitrogen mineralization and metabolism		2	4

Daily exam	Lecture with presentation	Factors affecting nitrogen mineralization and metabolism		2	5
Daily exam	Lecture with presentation	Definition of enzyme, its structure and functional role Motivation urease enzyme		2	6
Daily exam	Lecture with presentation	Definition of compost and factors affecting its formation The stages that compost goes through		2	7
Daily exam	Lecture with presentation	Steps to make compost Uses and applications of compost		2	8
Daily exam	Lecture with presentation	?What does biofertilization mean Bio-nitrogen fertilizers The importance of biofertilization Download biofertilizers How to load biofertilizers		2	9
Daily exam	Lecture with presentation	Organic fertilization and its benefits		2	10
Daily exam	Lecture with presentation	The effect of organic fertilization on physical soil properties		2	11
Daily exam	Lecture with presentation	The effect of fertilization on soil chemical properties		2	12
Daily exam	Lecture with presentation	The effect of organic fertilization on soil biological activity		2	13
Daily exam	Lecture with explanation and presentation	Comparison between organic and chemical fertilization on soil and plants		2	14
Daily exam	Lecture with explanation and presentation	Sustainable agriculture and its relationship with the environment and organic matter		2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Daily exam and homework	a lecture	Determine the properties of soil affected by organic matter		3	1
Daily exam	a lecture	Taking samples of organic materials . and preparing them in the laboratory		3	2
Homework	a lecture	Types of organic matter and their . sources in the soil		3	3
a report	a lecture	Direct methods for estimating soil organic matter		3	4
Daily exam	a lecture	Indirect methods for estimating soil organic matter		3	5
Daily exam and report	a lecture	decomposition of organic matter in the soil		3	6
a report	Lecture with explanation and presentation	Factors affecting the decomposition of organic matter in soil		3	7
		monthly exam		3	8
a report	a lecture	organic nitrogen mineralization		3	9
Daily exam	a lecture	Methods for describing the properties of organic materials		3	10
a report	a lecture	How to extract humic substances		3	11
a report	a lecture	Determine theC/N ratio		3	12
a report	a lecture	Measuring the optical density of humus		3	13
Daily exam	a lecture	Humic acid estimation + exam		3	14
a report	a lecture	Estimation of humic acid/humin ratio		3	15
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					

Learning and teaching resources .12	
Nothing	Required textbooks (methodology if available)

Soil organic matter: Edited by M. Schnitzer - Soil Research Institute, Agriculture Canada, Ottawa, Ont., Canada SU Khan - Chemistry and Biology Research Institute, Agriculture Canada, Ottawa, Ont., Canada Volume 8,	Main References (Sources)
Soil Chemistry Book: Written by: Kazem Mashhout Awad: 1986 Biofertilizer Technologies Book: Written by Hassan Ali Abdul	Recommended supporting books and references (scientific
https://www.amazon.com/Soil-Organic-Matter-Environmental-Engineering/dp/1621002721	Electronic references, websites

Course Description Soil Chemistry

Course name .1	
soil chemistry	
Course code .2	
SOCH313	
Semester/Year .3	
First - Third Stage	
Date of preparation of this description .4	
2023/9/1	
Available forms of attendance .5	
My presence	
Number of study hours (total) / Number of units (total) .6	
hours (2 theoretical + 3 practical) / 3.5 units 5	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name Dr. Muhammad Malik Yassin :Email Mohamed.yaseen@uobasrah.edu.iq :Dr. Badaa Alawi Hassan Email baidaa.hassin@uobasrah.edu.iq	
Course objectives .8	
• Identify the phases of soil (solid phase, liquid phase, and (gas phase • The most important chemical properties of soil • Factors affecting soil formation and development	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10					
Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	a lecture	Soil solution chemistry	The student will be able to	2	1
Daily exam		Acid-base, oxidation-reduction reactions	The student understands	2	2
Daily exam		Interference of soil solution and solid phase	The student understands	2	3
Daily exam		Practical applications of the electric double layer theory	The student realizes that	2	4
Daily exam	a lecture	ion exchange	The student can	2	5
Daily exam	a lecture	Ion exchange equations	Applying equations for	2	6
Daily exam	a lecture	Cation exchange capacity	The student will be able to	2	7
		monthly exam	-		8
Daily exam	a lecture	solubility equilibrium	The student's awareness of	2	9
Daily exam	a lecture	Carbon balance in soil	The student has a clear	2	10
Daily exam	a lecture	Phosphorus balance in soil	The student understands	2	11
Daily exam	a lecture	Soil acidity and alkalinity	The student knows the	2	12
Daily exam	a lecture	Soil regulatory capacity	The student knows the	2	13
		Monthly exam	Understandin g fertilizer pro	2	14
		Scientific trip	-	2	15
Course Evaluation .11					
Final exam out of 50 (theoretical part) 30 marks - 10 for each monthly exam and 10 for the daily exam (Practical part) 20 marks - 10 monthly exams, 5 daily exams, 5 reports on practical experiments					

Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Daily exam	Lecture and fieldwork to collect samples	Methods of taking soil samples for chemical analysis	The student is able to identify the correct methods for taking soil samples for chemical analysis and implement the steps of collection, transportation, and storage	3	1
Daily exam and homework	a lecture	Methods of expressing concentrations	The student will be able to distinguish between methods of expressing the concentration of solutions, such as malar and normal, and prepare solutions according to the required	3	2
Scientific report	a lecture	Soil solution separation-estimation of reactivity electrical and conductivity	The student will be able to measure soil acidity and salinity using various methods, understand the scientific basis of measuring devices, and interpret the results	3	3
Scientific report	practical experience	Overall assessment of the elements	The student will be able to perform the steps of total element estimation in samples and analyze the results to determine the .concentration of elements	3	4
a report	practical e xperience	Estimation of dissolved ions by titration	The student will be able to perform a chemical titration to estimate the concentration of dissolved .ions in a soil solution	3	5
Practical report and daily exam	practical experience	Estimation of cation exchange capacity	The student will be able to understand cation exchange capacity and apply it in the calculations .of the soils under study	3	6
Scientific report	practical experience	Estimation of sodium and potassium using a flame photometer	The student is able to operate a flame detector and use it to estimate sodium and potassium	3	7
		monthly exam	-	3	8

Scientific report	practical experience	Sulfate determination by spectrophotometry	The student will be able to use spectrophotometry to estimate sulfate concentration and accurately apply the	3	9
Scientific report	practical e xperience	Estimation of exchangeable cations in soil	The student is able to apply laboratory methods to estimate ions and analyze their role in soil	3	10
Practical report and daily exam	practical e xperience	Estimation of gypsum CaSO4 calcium sulfate))	The student is able to apply laboratory methods to estimate the gypsum content in soil and analyze its effect on soil	3	11
Practical report with daily exam	Practical experience using different estimation methods	carbonate CaCO3)) determination	The student is able to perform the steps of estimating total carbons, interpret the results, and their impact on chemical reactions and nutrient .availability		12
Scientific report	Learn the methods of estimating heavy elements	Heavy elements estimatio n	The student will be able to use laboratory methods to extract and estimate heavy metal concentrations in soil and evaluate their .environmental risks	3	13
		monthly exam		3	14
		Scientific trip	-		15

Learning and teaching resources .12	
Kazem Mashhout Awad, 1985, Principles of Soil Chemistry. .University of Basra	Required textbooks (methodology if available)
	Main References (Sources)
	Recommended supporting books and references
	Electronic references, websites

Course name .1					
soil minerals					
Course code .2					
SO311					
Semester/Year .3					
Third Stage - First					
Date of preparation of this description .4					
2024-2-1					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name :Prof. Dr. Muhammad Malik Yassin Email Mohamed.yaseen@uobasrah.edu.iq					
Course objectives .8					
• the components of the soil system, Identify crystallization processes, and primary mineral .formation • sand, silt and Identify the mineral composition of .clay particles			Course objectives		
Teaching and learning strategies .9					
weeks of in-person lectures, including two monthly exams and 15 .daily exams			Strategy		
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Overview - Introduction to Soil Mineralogy	A student who possesses the basic concepts of mineralogy and its	2	1

Daily exam	Lecture with explanation and presentation	Magma components: non-volatile materials, volatile materials Bown series : continuous series, discontinuous series	A student with a clear understanding of the components of magma and the basis of reactions and .formation of minerals	2	2
Daily exam	Lecture with explanation and	Crystallization processes and formation of primary minerals, Crystallography : crystal components,	A student who has information about the crystal, its components, the	2	3
Daily exam	Lecture with explanation and presentation	Clay minerals - Types of clay minerals - Sources of charge - Types of surface charge	The student can identify the types of clay minerals and the charge sources of .these minerals	2	4 5 +
Daily exam	Lecture with explanation and presentation	Kaolinite group 1:1 minerals: general introduction, general properties, composition, and methods of diagnosis	A student who has knowledge about 1:1 minerals and their properties and can .identify them	2	6
Daily exam	Lecture with explanation and presentation	Clay minerals group 1:2 Smectite group of minerals: general introduction, general properties, diagnostic methods	A student identifies minerals (smectite 2:1 group), their properties and methods of diagnosis, especially	2	8+7
Daily exam	Lecture with explanation and presentation	Mica group of minerals: general introduction, general properties - Illite mineral - Muscovite - The houses	A student capable of distinguishing mica minerals and identifying their types, illite, muscovite, and biotite, and methods	2	10+9
Daily exam	Lecture with explanation and	Clay Mineral Group 1:1:2 (Chlorite Mineral Group) Overview – General characteristics,	A student distinguishes 1:1:2 minerals (chlorite), knows their	2	11
Daily exam	Lecture with explanation and presentation	Interstratified minerals group Overview – Composition of Polarized Metals - Classification and naming of applied minerals - Diagnosis of applied metals	A student who has an understanding of applied minerals, their names, and how to .diagnose them	2	13+12

Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation and presentation	Obtaining soil samples and making initial preparations Showing illustrative images of some minerals	The student should be able to understand the importance of collecting soil samples as a basic stage, understand its impact	3	1
Daily exam	Lecture with explanation and presentation	Separation of sand from a soil sample by wet screening - Display of images of lava and magma	The student has an understanding of wet sieving and sand separation and distinguishes between lava and magma .images	3	2
Daily exam	Lecture with explanation and presentation	Separation of light and heavy sand minerals Demonstration of crystal components	The student will be able to apply separation techniques using high-density liquids such as bromoform to separate light metals from .heavy ones	3	3
Daily exam	Lecture with explanation and presentation	Preparation of glass slides for light and heavy sand minerals Diagrams of Bowen's series reactions	The student should be able to prepare glass slides containing heavy and light sand minerals using the necessary tools and materials for their preparation, such as blades and chemical solutions, and using a microscope to .examine minerals	3	4
Daily exam	Lecture with explanation and presentation	Examination of the morphological characteristics of light and heavy sand minerals using a polarizing microscope Display of silicate mineral samples	The student should be able to use and adjust the polarizing microscope to examine minerals and analyze morphological characteristics such as color, transparency, and reflectance to determine the type of .mineral	3	5

Daily exam	Lecture with explanation and presentation	Removal of binding materials from the soil (sample (silt and clay	The student should be able to understand the importance of removing binders and be able to apply binder removal techniques using methods such as water	3	6
Daily exam	Lecture with explanation and	Removal of free oxides from the sample Display of three-dimensional shapes for	The student will be able to understand the chemical methods used to remove free	3	7
Daily exam	Lecture with explanation and presentation	Separation of clay minerals from silt by extraction or centrifugation	The student will be able to apply practical steps to separate the components of a sample , and obtain a pure clay fraction for the purposes of	3	8
Daily exam	Lecture with explanation and	Carry out the initial procedures to saturate the clay sample with magnesium chloride and	The student will be able to perform the initial procedures for saturating clay	3	9
Daily exam	Lecture with explanation and presentation	Preparing glass slides and pouring clay sample to prepare it for X-ray examination - Illustration through pictures of the mineral composition 1:1	The student will be able to prepare glass slides and properly pour a clay sample for X-ray examination, with the ability to interpret X-ray images	3	10
Daily exam	Lecture with explanation and presentation	Explain Bragg's law and the relationship between the base distance of a metal and the angle of .incidence of X-rays	The student will be able to explain Bragg's Law, and clarify the relationship between the basal distance of minerals and the angle of incidence of X-	3	11
Daily exam	Lecture with explanation and presentation	Study of X-ray diffraction by diffraction curves (chart) and identification of minerals present in the sample Slideshow and illustrations of the	The student will be able to analyze diffraction curves resulting from X-ray examination and accurately identify the minerals present in the	3	13
Daily exam	Lecture with explanation and	Calculating the area under diffraction to determine the dominance of metals	The student will be able to calculate the area under the diffraction curves	3	14
		Exam		3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Dr. Salman Khalaf Issa. 2022. Soil Minerals. Ministry of Higher Education and Scientific Research. University of	Required textbooks (methodology if (available
Dixon, J.B., Weed. SB and White, JL 1977. Minerals in soil environments. Soil Sci. Soc. Of Am. Madison, Wisconsin Dixon, J.B., 2002.Soil mineralogy with environmental	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Water and Natural Resources Economics

1. : Course name
Water and Natural Resources Economics
2. :Course code
RECO321
3. Semester/Year: Semester
Second / Third Stage
4. Date this description was prepared
02/14/2024
5. Available attendance forms:
In-person only
6. :Number of study hours (total) / Number of units (total)
hours per year, 2 hours per week / Number of units: 2 30
7. Name of the course administrator (if more than one name is mentioned)
:Name: Asst. Prof. Dr. Khawla Rashid Hassan Emailkhawla.hassan@uobasrah.edu.iq
8. Course objectives
regarding the importance of water resources, the Providing students with the required skills .1 nature of supply and demand, and the impact of this on economic activities, especially .as well as other natural resources ,agricultural activity, and raising its efficiency .Preparing students to enter the labor market by providing them with the required knowledge .2

9. Teaching and learning strategies	
1. .Knowledge in Education Collaborative Concept Planning 2. .Brainstorming teaching strategy 3. Education Strategy Notes Series	Strategy

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Weekly, monthly, daily, written and end-of-year .exams	Explaining the scientific material by clarifying the subject, various economic terms, and the method of measuring some mathematical topics in the .lecture -2 Writing a report on a topic related to the subject and presenting it to the students with additional clarificatio	Water and Natural Resources Economics	Definition and classificatic of water resources	hours 2	1
			The role of water resources in economic activity	hours 2	2
			Water supply and demand	hours 2	3
			The impact of dams and irrigation projects on the agricultural sector in Iraq	hours 2	4
			Land resource economics	hours 2	5
			Demand for land resource	hours 2	6
			Land resource presentation and optimal use	hours 2	7
			Agricultural ownership in Iraq	hours 2	8
			Human resources and their role in developing the national economy	hours 2	9
			Oil resources in Iraq	hours 2	10

	n from the .professor .3 Discussing some related topics and surveying students' opinions .on them		Renewable energy and its uses	hours 2	11
			Solar energy and its economic uses	hours 2	12
			Uses of nuclear energy in the economy	hours 2	13
			Natural resource development methods	hours 2	14
				hours 2	15

11. Course Evaluation
.Distribution as follows: 40 marks for the monthly exam, divided into two exams marks report 5 points for student participation and discussion 5

12. Learning and teaching resources	
	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports...)
https://hama-univ.edu.sy/newsites/agricultural/wp-content/uploads/2018/10/%D9%86%D8%B8%D8%B1%D9%8A-%D8%A7%D9%82%D8%AA%D8%B5%D8%A7%D8%AF%D9%8A%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D9%88%D8%A7%D8%B1%D8%AF.pdf	Electronic references, websites

Puzzle course

Course name .1
puncture
Course code .2
DRAN319
Semester/Year .3

Second - Third Stage
Date of preparation of this description .4
3-1-2024
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Asst. Prof. Dr. Amin Hussein Jebr Emailamen.jebr@uobasrah.edu.iq
Course objectives .8

• Investigating drainage problems in arid areas • Identify the types of surface and covered drainage networks • Using drains to reclaim salinized and waterlogged lands • Drainage network design	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	The concept of drainage, justifications for establishing drainage channels, and the relationship between drainage and plant growth and productivity		2	1
Daily exam	Lecture with presentation	Physical soil properties related to drainage		2	2
Daily exam	Lecture with presentation	The hydrological cycle and the location of irrigation and drainage in it		2	3
Daily exam	Lecture with presentation	Water flow in soil, its forms and its relationship to the concept of drainage, flow analysis		2	4

Daily exam	Lecture with presentation	Soil drainage and salinity, leaching requirements and salt balance		2	5
Daily exam	Lecture with presentation	Investigations required for the design and construction of drains, exploratory and design investigations		2	6
Daily exam	Lecture with presentation	Design of encapsulated materials for puzzles		2	7
Daily exam	Lecture with presentation	Types of trenches, their classification and the objectives of their construction		2	8
Daily exam	Lecture with presentation	Open drains		2	9
Daily exam	Lecture with presentation	covered drains		2	10
Daily exam	Lecture with presentation	Cross-sectional and vertical trowels		2	11
Daily exam	Lecture with presentation	Designs of open and covered drainage systems and calculation of the distances between drainage systems		2	12
Daily exam	Lecture with presentation	Mechanization of sewers and sewer implementation supplies		2	13
Daily exam	Lecture with explanation and presentation	Open sewer maintenance		2	14
Daily exam	Lecture with explanation and presentation	Covered manhole maintenance		2	15
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					

Practical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week

Daily exam and homework	a lecture	Investigations required to establish sewers, exploratory and executive investigations		2	1
Daily exam	a lecture	Surveys, adjustment and settlement procedures and their calculations		2	2
Homework	a lecture	Saturated water conductivity measurement in the laboratory		2	3
a report	a lecture	Measurement of saturated water conductivity in the field above the groundwater level		2	4
Daily exam	a lecture	Measurement of saturated water conductivity in the field below the groundwater level		2	5
Daily exam and report	a lecture	Measuring groundwater levels		2	6
a report	Lecture with explanation and presentation	Calculating water drainage in open drains		2	7
		monthly exam		2	8
a report	a lecture	Open-ended design		2	9
Daily exam	a lecture	Covered trenches design		2	10
a report	a lecture	Applications in sewer spacing calculations, under steady flow		2	11
a report	a lecture	Applications in sewer spacing calculations under unsteady flow conditions		2	12
a report	a lecture	Horizontal, vertical and radial water flow to drains		2	13

Daily exam	a lecture	Using computers in designing drainage systems		2	14
a report	a lecture	Field visit to one of the drainage projects		2	15
		monthly exam			16

Learning and teaching resources .12	
Nothing	Required textbooks (methodology if available)
Highway Task Force. 1971. Handbook of steel drainage and highway construction products (2nd Ed). American Iron and Steel Institute, 150 E 2nd Street; New York. 368 p. Pluimer, M. L. et. al. NCHRP Report 870: Field Performance of Corrugated HDPE Pipes Manufactured with Recycled Materials. National Academy of Sciences. Washington, DC. 2018.	Main References (Sources)
Drainage, Investigations, Designs, Implementation and Maintenance Mohsen Muharib Al-Lami and Alaa Saleh Al-Janabi. University of .1991 Mosul	Recommended supporting books and references (...scientific journals, reports)
https://archive.nptel.ac.in/courses/126/105/126105010 /	Electronic references, websites

Soil salinity course

Course name .1
soil salinity
Course code .2
SSAL316
Semester/Year .3
Second - Third Stage
Date of preparation of this description .4
2024-1-31
Available forms of attendance .5
My presence

Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3.5 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name :Salwa Jumaa Fakher Email salaw.fakher@uobasrah.edu.iq					
Course objectives .8					
• Identify the sources of salts in nature • Conditions for the formation of salt-affected soils • Classification and nomenclature of salt-affected soils • Effect of salinity on plant growth			Course objectives		
Teaching and learning strategies .9					
.weeks of in-person lectures, including two monthly exams and daily exams 15				Strategy	
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	The problem of salinity and its impact on agricultural production	Students will be able to identify the problem of salinity	2	1
Daily exam	Lecture with presentation	Sources of salt components	Students will be able to distinguish between the sources of salts in	2	2
Daily exam	Lecture with presentation	Conditions for the formation of salt-affected soils	Students will be able to distinguish between the conditions in the	2	3
Daily exam	Lecture with presentation	Water and salt balance in soil and its relationship to salinity	Students will be able to determine the salt and water balance in soil	2	4
Daily exam	Lecture with presentation	Chemical and physical properties of salts accumulated in salt-affected soils	Students will be able to identify the chemical and physical	2	5
Daily exam	Lecture with presentation	Stages of salinization in soils	Students will be able to identify the stages of salinization in	2	6
Daily exam	Lecture with presentation	Classification and nomenclature of salt-affected soils	nothing	2	7
Daily exam	Lecture with presentation	Classification of salt-affected soils in Iraq	Students will be able to identify the classification and naming of	2	8

Daily exam	Lecture with presentation	Effect of soil salinity on plant growth	Students will be able to identify the classification	2	9
Daily exam	Lecture with presentation	Salt tolerance of agricultural crops	Students will be able to identify the effects of	2	10
Daily exam	Lecture with presentation	Irrigation water quality	Students will be able to identify aspects of plant	2	11
Daily exam	Lecture with presentation	Controlling soil salinity and methods of coexisting with it	Students will be able to identify methods of	2	12
Daily exam	Lecture with presentation	Reclamation of saline soils	Students will be able to identify different washing	2	13
Daily exam	Lecture with explanation	Reclaimed soil management	nothing	2	14
Daily exam	Lecture with explanation	Results of some experiments in reclamation of saline lands in Iraq	nothing	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation	Experiment on the effect of salinity on crop seed .germination	Students will be able to identify the effect of	3	1
Daily exam	Lecture with explanation	Experiment on the effect of salinity on wheat growth in a greenhouse	Students will be able to grow wheat under	3	2
Daily exam	Lecture with explanation	Soil salinity measurement	Students will be able to measure soil salinity in	3	3
Daily exam	Lecture with explanation	Methods of expressing soil salinity	Students will be able to extract salts from soil in	3	4
Daily exam	Lecture with explanation	Estimation of dissolved ions in soil and water extract by titration method	Students will be able to estimate the dissolved	3	5
Daily exam	Lecture with explanation	Estimation of dissolved ions by flame photometry	Students will be able to measure the concentrations	3	6

Daily exam	Lecture with explanation	Irrigation water quality assessment	nothing	3	7
Daily exam	Lecture with explanation	Soil column salinization experiment	Students will be able to evaluate the quality of	3	8
Daily exam	Lecture with explanation	Analysis of saline soil with soil columns	Students will -1 be able to salt soil with columns	3	9
Daily exam	Lecture with explanation	Laboratory experiment for washing saline soil columns and calculating the washing	Students will be able to wash saline soil	3	10
Daily exam	Lecture with explanation	Designs of leveling and modification operations for reclamation purposes	Students will be able to calculate point levels and	3	11
Daily exam	Lecture with explanation	Preparing soil salinity maps during reclamation operations	Students will be able to identify the importance of	3	12
Daily exam	Lecture with explanation	Preparing soil salinity maps during reclamation operations	Students will be able to identify problems faced by	3	13
Daily exam	Lecture with explanation	Study of operation and maintenance problems in reclamation projects	nothing	3	14
Daily exam	Lecture with explanation	A scientific trip to one of the land reclamation projects	Students will be able to understand what they have	3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
• Soil Salinity - Prof. Dr. Ahmed Haider Al-Zubaidi (1989). Ministry of Higher Education and Scientific Research - .University of Basra • Land Reclamation - Prof. Dr. Ahmed Haider Al-Zubaidi (1992). Ministry of Higher Education and Scientific Research -	Required textbooks (methodology if available)
	Main References (Sources)
Handbook for Saline Soil management	Recommended supporting books and references (scientific
	Electronic references, websites

Course name .1					
soil morphology					
Course code .2					
SOMO318					
Semester/Year .3					
Second - Third Stage					
Date of preparation of this description .4					
2024-1-31					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3.5 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name :Salah Mahdi Sultan Emailsalah.sultan@uopbasrah.edu.iq					
Course objectives .8					
• Understanding the concept of soil morphology • The most important morphological soil characteristics • Genetic and diagnostic prospects and horizons			Course objectives		
Teaching and learning strategies .9					
.weeks of in-person lectures, including two monthly exams and daily exams 15			Strategy		
Course structure .10					
Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with explanation and	Definition of morphology and its position in the system of pedological sciences, the system of ideological sciences, and the	To be able to understand and	2	1
Daily exam	Lecture with explanation and	Soil formation and development	To be able to understand and	2	2

Daily exam	Lecture with explanation and	Soil forming factors: climate, soil temperature regimes, and soil .moisture	To be able to understand and	2	3
Daily exam	Lecture with explanation and	Topographical factor, biology	To be able to understand and	2	4
Daily exam	Lecture with explanation and	Soil formation factors: parent material, time	To be able to understand and	2	5
Daily exam	Lecture with explanation and	Soil formation processes: genetic pool	To be able to understand and	2	6
Daily exam	Lecture with explanation and	Soil-forming processes: general group	To be able to understand and	2	7
Daily exam	Lecture with explanation and	Soil horizons, nomenclature and main horizons	To be able to understand and	2	8
Daily exam	Lecture with explanation and	Diagnostic prospects: superficial	To be able to understand and	2	9
Daily exam	Lecture with explanation and	Diagnostic prospects: subsurface	To be able to understand and	2	11-10
Daily exam	Lecture with explanation and	Morphological soil characteristics	To be able to understand and	2	12
Daily exam	Lecture with explanation and	Morphological soil characteristics	To be able to understand and	2	13
Daily exam	Lecture with explanation and	Soil Micromorphology - Characterization - Uses and Applications	To be able to understand and	2	14
Daily exam	Lecture with explanation and	Morphological and morphological study of Iraqi soils	To be able to understand and	2	15
Practical part					

Daily exam	Lecture with explanation and	Learn about the morphological description form and the tools used .in morphological description	To be able to understand and	3	1
Daily exam	Lecture with explanation and	Selection of the soil preparation site and the factors affecting it	To be able to understand and	3	2
Daily exam	Lecture with explanation and	Training on soil texture discrimination in the laboratory and field	To be able to understand and	3	3
Daily exam	Lecture with explanation and	Study and field training on soil color and spotting	To be able to understand and	3	4
Daily exam	Lecture with explanation and	Study of soil structure and field training	To be able to understand and	3	5
Daily exam	Lecture with explanation and	Study and field training on the qualities of posture and welding	To be able to understand and	3	6
Daily exam	Lecture with explanation and	Study of the internal drainage characteristic and how to measure it in the field	To be able to understand and	3	7
Daily exam	Lecture with explanation and	Study of some other morphological characteristics: root distribution, ,porosity, salinitypH and the , method of recording them in the	To be able to understand and	3	8
Daily exam	Lecture with explanation and	Study of the slope property, how to measure it, and its relationship to morphological phenomena, in .addition to soil depth	To be able to understand and	3	9
Daily exam	Lecture with explanation and	Study of the calcareous property and horizon boundaries	To be able to understand and	3	10
Daily exam	Lecture with explanation and	Practice conducting a morphological description of a complete soil profile and recording the characteristics in a	To be able to understand and	3	11
Daily exam	Lecture with explanation and	Morphological characteristics of the world's soils	To be able to understand and	3	12

Daily exam	Lecture with explanation and	Field observations of soil types in Iraq	To be able to understand and	3	13
Daily exam	Lecture with explanation and	Preparing a report with a morphological description document	To be able to understand and	3	15-14

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Dr. Walid Khalid Al-Akidi and Dr. Shaker Mahmoud Al-Issawi. Soil Morphology. , Ministry of Higher Education and .1989	Required textbooks (methodology if (available
2- Soil survey staff Manual, 2003, USDA	Main References (Sources)
	Recommended supporting books and references (scientific journals,
	Electronic references, websites

Remote Sensing Course Description

Course name .1
remote sensing
Course code .2
RESE315
Semester/Year .3
Second - Third Stage
Date of preparation of this description .4
4 202-1-31
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7

:Name .DrMohammed Ahmed Kazim :Emailmohammed.ahmed@uobasrah.edu.iq

Course objectives .8

• Understand the concept of remote sensing • Basic elements of a remote sensing system • satellites • General Introduction to Geographic Information Systems • Symbols in GIS software • Some special applications in GIS software •	Course objectives

Teaching and learning strategies .9

.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with explanation	History and objectives of remote sensing		2	1
Daily exam	Lecture with explanation	Electromagnetic energy and parts of the electromagnetic spectrum		2	2
Daily exam	Lecture with explanation	Energy interaction with environmental components		2	3
Daily exam	Lecture with explanation	Spectral reflectivity and factors affecting it		2	4
Daily exam	Lecture with explanation	Aerial photography and its stages of development		2	5
Daily exam	Lecture with explanation	Types of aerial photographs and their characteristics		2	6
Daily exam	Lecture with explanation	Aerial photo classification rules		2	7
Daily exam	Lecture with explanation	Types and characteristics of space platforms		2	8
Daily exam	Lecture with explanation	Types of prescriptions for sensors		2	9

Daily exam	Lecture with explanation	Types and characteristics of spatial data Improve spatial data		2	10 and 11
Daily exam	Lecture with explanation	Satellite image classification methods		2	12
Daily exam	Lecture with explanation	remote sensing applications		2	13
Daily exam	Lecture with explanation	Geographic Information Systems		2	14 and 15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation and presentation	Preparing map types		3	1
Daily exam	Lecture with explanation and presentation	Interpretation of aerial photographs		3	2
Daily exam	Lecture with explanation and presentation	Entering spatial data using the Ardas program		3	3
Daily exam	Lecture with explanation and presentation	Combining spectral and spatial optimization		3	4
Daily exam	Lecture with explanation and presentation	Improve satellite images		3	5
Daily exam	Lecture with explanation and presentation	Satellite image extraction		3	6
Daily exam	Lecture with explanation	Applications of image processing space optimization methods		3	7

	and presentation				
Daily exam	Lecture with explanation and presentation	Visual interpretation of satellite data		3	8
Daily exam	Lecture with explanation and presentation	Automated data interpretation		3	9
Daily exam	Lecture with explanation and presentation	Unsupervised classification of spatial data		3	10
Daily exam	Lecture with explanation and presentation	directed classification of spatial data		3	11
Daily exam	Lecture with explanation and presentation	Calculating plant indicators			12 and 13
Daily exam	Lecture with explanation and presentation	remote sensing applications			14 and 15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
	Required textbooks (methodology if available)
• Remote Sensitization: Dr. Ahmed Saleh Al-Mashhadani, d. Ahmed Madlool Al Kubaisi (in press).	Main References (Sources)
• Shlemon Khoshaba, 1986, aerial photography.	Recommended supporting books and references (scientific
	Electronic references, websites

Irrigation course description

Course name .1					
Irrigation					
Course code .2					
IRRQ318					
Semester/Year .3					
Second - Third Stage					
Date of preparation of this description .4					
2024/2/1					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3.5 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name :Yahya Jihad ShabibEmailyahia.shabib@uobasrah.edu.iq					
Course objectives .8					
• Understanding the importance of field irrigation from an agricultural and engineering perspective, with the aim of identifying the best steps and methods for calculating irrigation requirements and the most important			Course objectives		
Teaching and learning strategies .9					
weeks of in-person lectures, including two monthly exams, daily exams, and 15 .scientific reports			Strategy		
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Direct questions to students and involve	theoretical lecture	A historical overview of irrigation in Iraq	Teaching students related concepts	2	1
Tests to solve some problems	Lecture with explanation	Methods of measuring soil moisture	Teaching students the most important	2	2

Direct questions to students and	Lecture with explanation	Irrigation water quality	Students' understanding of the determinants	2	3
Daily exam and preparation	Lecture with explanation	Soil properties related to irrigation	Helping students understand and explain the most	2	4
Daily exam and preparation	Lecture with explanation	Water seepage in the soil	Teaching students the most important	2	5
Tests to solve some problems	Lecture with explanation	The most important mathematical relationships for irrigation calculations	Teaching students the most important	2	6
Pop quizzes and questions	Lecture with explanation	Irrigation water measurements	Teaching students the most important	2	7
Pop quizzes, questions, answers, and	Lecture with explanation	Irrigation water transportation and distribution Water pumping and capacity	Teaching students the most important	2	8
Pop quizzes and questions	Lecture with explanation	Irrigation efficiencies	Teaching students the most important	2	9
Pop quizzes and questions	Lecture with explanation	Water Requirements Part One	Teaching students the most important	2	10
Pop quizzes and questions	Lecture with explanation	Water Requirements Part Two	Teaching students the most important	2	11
Daily exam and preparation	Lecture with explanation	Flood irrigation methods	Learn about the system and its most important	2	12
Daily exam and preparation	Lecture with explanation and	Drip irrigation	Learn about the system and its most important	2	13
Daily exam and preparation	Lecture with explanation and	sprinkler irrigation	Learn about the system and its most important	2	14
		monthly exam		2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam and laboratory	Lecture with explanation	Methods of taking moisture samples and visiting college fields	Teaching students how to perform	3	1

Daily exam, report writing and	Lecture with explanation	Mathematical relationships for soil components and soil water equivalent depth	Helping students understand the most important	3	2
Daily exam and reports	Lecture with explanation	Methods of measuring soil moisture	Teaching students how to perform	3	3
Daily exam, field experiment,	Lecture with explanation	Field capacity and permanent wilting point measurement	Teaching students how to perform	3	4
Daily exam, field experiment,	Lecture with explanation	Measure the depth	Teaching students how to perform	3	5
Daily exam and surprise test	Lecture with explanation	Water consumption	View the most important available	3	6
Student participation and quick	Lecture with explanation and	Watching demonstrations of irrigation equipment and the most important irrigation	Teaching students how to measure	3	7
Homework questions and	Lecture with explanation	Methods of measuring irrigation water discharge	To make students understand the most important	3	8
Daily exam and reports	Lecture with explanation	Irrigation canal design	Teaching students to prepare reports	3	9
Daily exam with visual aids	Lecture with explanation	Irrigation methods	Teaching students how to measure	3	10
Daily exam and quick test	Lecture with explanation and	Drip irrigation network design	Teaching students and informing them	3	11
Daily exam and math problems	Lecture with explanation	Irrigation flow measurement	Teaching students and informing them	3	12
Daily Exam Presentation with	Lecture with explanation and	The most important types of pumps	Teaching students and informing them	3	13
Questions, answers and a test of	Lecture with explanation and	Some terms expressing the capacity of pumps	View irrigation equipment and devices	3	14
Questions, answers, and student	Lecture with explanation and	Visit to the laboratories of the Faculty of Engineering, Department of Mechanics		3	15
Questions, answers, and student	Lecture with explanation and	Visit the Agricultural Research Station to see the irrigation .methods there			
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					

Learning and teaching resources .12	
- Spectrum, NabilIbrahim 1988Irrigation basics and applications. Ministry of Higher Education and	Required textbooks (methodology if (available
- Al-Hadith, Issam Khadir and others. Modern Ministry of Higher .irrigation technologies Education and Scientific Research. University of .Anbar	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Modern Irrigation Systems Technologies Course Description

Course name .1	
Modern irrigation systems technologies	
Course code .2	
IRTE418	
Semester/Year .3	
First - Fourth Soil	
Date of preparation of this description .4	
2024/1/10	
Available forms of attendance .5	
My presence	
Number of study hours (total) / Number of units (total) .6	
hours (2 theoretical + 3 practical) 53.5 units	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name :Yahya Jihad ShabibEmailyahia.shabib@uobasrah.edu.iq	
Course objectives .8	
• Learn about the most important applications of field irrigation systems and modern irrigation, using modern systems to improve the efficiency of irrigation water use and increase production, as well as practice applications	Course objectives
Teaching and learning strategies .9	

weeks of in-person lectures, including two monthly exams, daily exams, and 15 .scientific reports	Strategy

Course structure .10

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Direct questions to students and involve them in defining	theoretical lecture	Introduction to irrigation and concepts of interest to irrigation	Introducing students to the most important terms related to irrigation science	2	1
Solve problems, draw	Lecture with explanation	Types of flow and Reynolds number	The student learns to solve problems and laws related to	2	2
Tests, questions, and	Lecture with explanation	Secondary energy losses	The student learns to solve problems and laws related to	2	3
Pop quizzes, system design	Lecture with explanation	Optimal design of field irrigation system	The student learns the most important determinants	2	4
Daily exam, solving problems,	Lecture with explanation	surface irrigation	Learn about the system and its most important	2	5
Daily exam and preparation	Lecture with explanation	basin irrigation	Learn about the system and its most important	2	6
Daily exam and preparation	Lecture with explanation	Strip irrigation and drip irrigation	Learn about the system and its most important	2	7
Daily exam and preparation	Lecture with explanation	sprinkler irrigation	Learn about the system and its most important	2	8
Daily exam and preparation	Lecture with explanation and	Sprinkler irrigation systems and irrigation coordination	Learn about the system and its most important	2	9
Daily exam and preparation	Lecture with explanation	Drip irrigation	Learn about the system and its most important	2	10
Daily exam and preparation	Lecture with explanation With	Drip irrigation systems	Learn about the system and its most important	2	11
Daily exam and preparation	Lecture with explanation	Irrigation sufficiency, efficiency and consistency	Teaching students how to perform mathematical	2	12
Daily exam and preparation	Lecture with presentation	Modern irrigation systems equipment and accessories	Informing students about the most important	2	13

Mathematical solutions and problems,	Lecture with presentation	Water requirements and irrigation scheduling	Teaching students how to perform mathematical	2	14
		monthly exam		2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Student questions, participation,	Lecture with explanation	Applications in irrigation interval and irrigation depth	Teaching students how to perform operations and	3	1
surprise exam	Lecture with explanation With a visit to	Irrigation methods	To make students understand the most important	3	2
Student questions, participation,	Lecture with explanation Field	Drip irrigation system design	Teaching students how to perform operations and	3	3
Student questions, participation,	Lecture with explanation With	Sprinkler irrigation system design	Teaching students how to perform operations and	3	4
Student questions, participation,	Lecture with explanation	Hydraulic basics of sprinkler irrigation system and determining the spacing	Teaching students how to perform operations and	3	5
Direct questions and student	Lecture with explanation	Visit the agricultural research station to see the irrigation .methods there	View the most important available	3	6
Conducting experiments in the	Lecture with practical experience	Methods for determining soil moisture content	Teaching students how to measure humidity and take	3	7
Daily exam with reports	Lecture with practical experience	Water conductivity measurement is the measurement of the water level	To make students understand the most important	3	8
Questions and assignments	Presentation	Discussing related research and how to present results and .graphs	Teaching students to prepare reports and research on	3	9
Conducting experiments in the	Lecture with presentation and lab visit	Indirect methods for measuring soil moisture content	Teaching students how to measure humidity with	3	10
Student participation, problem	Lecture with explanation With a	Irrigation water measurements	Teaching students and informing them about	3	11
surprise exam	Lecture with presentation	Measuring water consumption	Teaching students and informing them about	3	12

Questions and tests with report	Lecture with presentation	Indirect measurement of water consumption	Teaching students and informing them about	3	13
Student questions, participation,	Lecture with presentation	A scientific visit to the laboratories of the College of Engineering	View irrigation equipment and devices	3	14
		monthly exam		2	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
1- Irrigation: Its Basics and Applications, by Dr. Nabil Ibrahim Al-Tayef and Dr. Issam Khadir Hamza Al-Hadith, 1988, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Irrigation and Drainage, authored by Dr. Laith Khalil Ismail, 2000, Ministry of Higher Education and Scientific Research - University of Mosul 3- Design and Management of Field Irrigation Systems, by Dr. Samir Mohamed Ismail, 2002, Faculty of	Required textbooks (methodology if (available
1- Irrigation: Its Basics and Applications, by Dr. Nabil Ibrahim Al-Tayef and Dr. Issam Khadir Hamza Al-Hadith, 1988, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Irrigation and Drainage, authored by Dr. Laith Khalil Ismail, 2000, Ministry of Higher Education and Scientific Research - University of Mosul 3- Design and Management of Field Irrigation Systems, by Dr. Samir Mohamed Ismail, 2002, Faculty of Agriculture, Alexandria University 4- Modern Irrigation Technologies and Other Topics in	Main References (Sources)
Iraqi academic scientific journals	Recommended supporting books and references (scientific journals, reports...)
Soil Science Society of America Library Genesis	Electronic references, websites

Hydrology and Water Resources Course Description

Course name .1
Hydrology and Water Resources
Course code .2
HWRE417
Semester/Year .3
First - Fourth Stage
Date of preparation of this description .4
3-1-2024
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Asst. Prof. Dr. Amin Hussein Jebr Emailamen,jeb@uobasrah,edu.iq
Course objectives .8

• Water distribution and sources on Earth • Water cycle in nature • Drought and floods • Groundwater and well movement	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	The hydrological cycle and water distribution across continents and oceans		2	1
Daily exam	Lecture with presentation	Precipitation, evaporation, and precipitation losses		2	2
Daily exam	Lecture with presentation	Surface runoff, flooding and baseflow		2	3

Daily exam	Lecture with presentation	Factors affecting surface runoff		2	4
Daily exam	Lecture with presentation	Types of waterways		2	5
Daily exam	Lecture with presentation	Floods and their negative effects on public property		2	6
Daily exam	Lecture with presentation	Water storage and reducing the effects of drought		2	7
Daily exam	Lecture with presentation	Water balance		2	8
Daily exam	Lecture with presentation	Hydrograph and Hydrograph Analysis		2	9
Daily exam	Lecture with presentation	Water reservoirs		2	10
Daily exam	Lecture with presentation	The importance of groundwater, sources of groundwater recharge		2	11
Daily exam	Lecture with presentation	groundwater movement		2	12
Daily exam	Lecture with presentation	Water well drilling and factors to consider when drilling		2	13
Daily exam	Lecture with explanation and presentation	Flow curves and water supply calculations		2	14
Daily exam	Lecture with explanation and presentation	The importance of remote sensing in monitoring surface water		2	15
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					

Practical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week

Daily exam and homework	a lecture	Methods of measuring precipitation		3	1
Daily exam	a lecture	Methods of expressing precipitation measurements		3	2
Homework	a lecture	Evaporation measurements from water bodies and how to reduce evaporation		3	3
a report	a lecture	Measuring water pressure and its relationship to surface runoff	Measuring water pressure and its	3	4
Daily exam	a lecture	Estimating evapotranspiration using positional equations		3	5
Daily exam and report	a lecture	Measuring water levels in waterways		3	6
a report	Lecture with explanation and	Measuring water discharge in different rivers		3	7
		monthly exam		3	8
a report	a lecture	Hydrograph		3	9
Daily exam	a lecture	Standard hydrograph and hydrograph derivation		3	10
a report	a lecture	Flood measurement methods		3	11
a report	a lecture	Drought measurement methods		3	12
a report	a lecture	Water Balance Calculation + Exam		3	13

Daily exam	a lecture	Water well drilling methods		3	14
a report	a lecture	Safe extraction of water from wells		3	15

Learning and teaching resources .12	
Nothing	Required textbooks (methodology (if available
1- Engineering hydrology. 1992. Muhammad Suleiman Hassan and others. University of Al Mosul. 2- Applied Hydrology. 1978. Ray K. Linsley et al. New York. USA. 3- Acreman, M. (ed.) (2000) *The hydrology of the UK, a study of change* . Routledge, London.	Main References (Sources)
Engineering Hydrology. 1992. Mohammed Suleiman Hassan et al. University of Mosul	Recommended supporting books and references (scientific journals,
https://water.usask.ca/hillslope/teaching/introduction-to-hydrology.php#top	Electronic references, websites

Course Description Soil and Water Conservation

Course name .1
Soil and water maintenance
Course code .2
SO403
Semester/Year .3
First - Fourth Stage
Date of preparation of this description .4
1 -10 3 202-
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3 units 5
Name of the course supervisor (if more than one name is mentioned) .7

:Name :Dr. Nihad Shaker Sultan Email alwalinalwali@gmail.com Hussam Hassan Abdul-Ali :Emailhusam.abdulaali@uobasrah.edu.iq	
Course objectives .8	
• Realizing the importance of the maintenance issue from the agricultural and engineering perspective, that there is no way to address the problems of erosion (water and wind) except by following	Course objectives
Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with presentation	Introduction to Soil and Water Conservation	Understand the concept and importance of soil and water conservation	2	1
Daily exam	Lecture with presentation	The fall	Understanding the role of rainfall in the hydrological cycle and its impact on soil	2	2
Daily exam	Lecture with presentation	The flood	Explaining the concept of runoff and its impact on soil and water loss	2	3
Daily exam	Lecture with presentation	water erosion	Identify the types and causes of water .erosion	2	4
Daily exam	Lecture with presentation	Water erosion control	Identify engineering means to reduce water erosion	2	5

Daily exam	Lecture with presentation	Water erosion control	Understanding plant methods for controlling water erosion	2	6
Daily exam	Lecture with presentation	Water erosion control	Learn about agricultural practices to .reduce erosion	2	7
Daily exam	Lecture with presentation	wind erosion	Understanding the causes and forms of wind erosion	2	8
Daily exam	Lecture with presentation	Wind erosion control	Learn about wind erosion control techniques	2	9
Daily exam	Lecture with presentation	grassy waterways	Explain the role of grassy channels in reducing	2	10
Daily exam	Lecture with presentation	Benches	Learn about the types of terraces and their importance in	2	11
Daily exam	Lecture with presentation	Temporary and permanent maintenance designs	Distinguish between temporary and permanent	2	12
Daily exam	Lecture with presentation	Small earth dams and water reservoirs	Explaining the importance of small water facilities in	2	13
Daily exam	Lecture with presentation	Planning for soil and water management system	Laying the technical and administrative foundations for	2	14
Daily exam	Lecture with presentation	Planning for soil and water management system	Develop comprehensive soil and water management	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Views	Scientific trip	Visit a weather station to learn about rain measurement .methods	Learn about rain gauges at weather .stations	3	1
Daily exam	Lecture with presentation	Rain data analysis	Rainfall record analysis and interpretation of results	3	2
Daily exam	Lecture with presentation	Calculating the maximum flow rate and using the basic water relations device	Using hydrometers to calculate runoff	3	3
Daily exam	Lecture with presentation	Design a field experiment to estimate water erosion	Conducting a field experiment to estimate soil losses from	3	4
Daily exam	Lecture with presentation	Applications based on the general equation for soil losses	Use the general equation to estimate soil .loss in the field	3	5
Daily exam	Lecture with presentation	Calculating the general equation factors for soil losses in the field and choosing the appropriate method for soil conservation in the field	Identifying the influencing factors and choosing the best maintenance	3	6
Daily exam	Lecture with presentation	Watching educational materials about water erosion and ways to control it by taking a scientific trip or showing films	Visual analysis of water erosion control methods	3	7
Daily exam	Lecture with presentation	Estimating wind erosion quantities in the field using the general wind erosion equation	Using the general equation to calculate wind erosion	3	8
Daily exam	Lecture with presentation	Estimating the susceptibility of some soils to wind erosion using a wind tunnel	Practical application for measuring soil resistance to wind erosion	3	9

Daily exam	Lecture with presentation	Designing grassy waterways	Designing water channels to reduce erosion	3	10
Daily exam	Lecture with presentation	Terrace design	Implementation of engineering designs for agricultural terraces	3	11
Daily exam	Lecture with presentation	Applications to temporary and permanent maintenance designs using visual aids	Practical application of appropriate design for each case	3	12
Daily exam	Lecture with presentation	Applications on small earth dams and water reservoirs using visual aids	Simulation of the operation of small dams and reservoirs for maintenance purposes	3	13
Daily exam	Lecture with presentation	Field observations on soil and water management procedures	Note practical applications of management systems in the field	3	14
a report	Views	Field observations (field visits)	Evaluation of the reality of field procedures in soil	3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
The Spectrum, Nabil Ibrahim1991Soil and Water Conservation. Ministry of Higher Education and	Required textbooks (methodology if (available
,Ismail, Laith Khalil1985. Soil Conservation. Ministry of Higher Education and Scientific .Research. University of Mosul. Nineveh. Translated .Fahd, Ali Abdul1984. Soil and Water Conservation	Main References (Sources)
,Al-Ani, Abdul Fattah Abdullah1987. Soil conservation. Ministry of Higher Education and	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Soil-Water-Plant Relationship :Course description

Course name .1					
The relationship between soil, water and plants					
Course code .2					
SO40					
Semester/Year .3					
First - Fourth Stage					
Date of preparation of this description .4					
1 -10 3 202-					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical + 3 practical) 3 units 5					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name Dr. Zainab Kadhim Hassan Email :zainab.kadhim@uibasrah.edu.iq					
Course objectives .8					
• Statement of the basic factors for the formation and development of soil • Define basic soil terms and their • .relationship to water and plants • The most important physical properties • of soil and their relationship to water and plants • The most important chemical properties •			Course objectives		
Teaching and learning strategies .9					
weeks of in-person lectures, including two monthly exams and daily 15 .exams			Strategy		
Course structure .10					
Theoretical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week

Daily exam	Lecture with presentation	Soil specifications soil texture, soil) composition) and their relationship to plant	The student will be able to understand the relationship between soil specifications,	2	1
Daily exam	Lecture with presentation	Soil Water: Energy Concepts of Soil Water, Energy Relationships in Water	The student will be able to understand the concepts of water energy and its	2	2
Daily exam	Lecture with presentation	Plant water requirements, evaporation and transpiration	The student will be able to identify basic water .requirements	2	3
Daily exam	Lecture with presentation	Plant water use efficiency, water supply and plant .behavior	The student will be able to understand the efficiency of water use and its impact on plant	2	4
Daily exam	Lecture with presentation	Air and soil temperature and their relationship to plant .growth and behavior	The student will be able to identify the most important physical properties of soil, such	2	5
Daily exam	Lecture with presentation	Soil colloids: their nature and practical importance Ion exchange and	The student will be able to identify soil colloids and the importance of .ion exchange	2	6
Daily exam	Lecture with presentation	Ion transfer from soil to roots, soil solution, intensity and quantity, .and root growth	The student will be able to understand the nature of ion transfer from the soil to the roots in	2	7
Daily exam	Lecture with presentation	Salt stress and its relationship to plant growth	The student will be able to understand salt stress and its impact on the relationship between	2	8
Daily exam	Lecture with presentation	Gypsum soil stress and plant growth	The student will be able to understand the stress of gypsum soil and its .effect on plant growth	2	9
Daily exam	Lecture with presentation	Nutritional stress and its relationship to plant growth	The student will be able to understand the importance of nutritional stress and its	2	10
Daily exam	Lecture with presentation	Water and water potential in the soil-plant-atmosphere .system	The student will be able to understand the importance of water stress and its impact on	2	11
Daily exam	Lecture with presentation	Macro and micronutrients and their relationship to .plant growth	The student will be able to identify and recognize macro and micro nutrients and	2	12

Daily exam	Lecture with presentation	The activity and secretions of biological groups in the soil and their	The student will be able to understand the biological aspect and its relationship to plant	2	13
Daily exam	Lecture with presentation	Heavy elements in soil and their relationship .to plant growth	The student will be able to identify heavy elements in the soil and their relationship to	2	14
Daily exam	Lecture with presentation	Soil pollution and its relationship to plant growth	The student will be able to understand the seriousness of soil pollution and its	2	15
Practical part					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Introduction to the scheduled experiments and preparation of their requirements	The student will be able to: Recognizing the importance of practical experiences in enhancing theoretical understanding. Identify the experiments scheduled during the course. Preparing and setting up the supplies and tools required for each	3	1
Daily exam	Lecture with presentation	Experiment to compare root growth and development in soils of different .textures	The student will be able :to Explain the effect of soil texture on root growth and .development Distinguish between the properties of sandy, clayey, and mixed soils and their effect on .plants Carry out an experiment to compare root growth in different .soils accurately	3	1

Daily exam	Lecture with presentation	Study of the effect of bulk density (soil compaction) on the conditions affecting the growth of microorganisms	The student will be able :to Explain the concept of soil bulk density and its effect on the physical .properties of soil Explain the relationship between soil compaction and the	3	3
Daily exam	Lecture with presentation	Calculating plant .water requirements	The student will be able :to Explain the factors that affect plant water requirements. Distinguish	3	4
			exam		5
Daily exam	Lecture with presentation	Evaporation and transpiration measurements	The student will be able to Explain the concepts of evaporation and transpiration and their role in the water cycle in nature	3	6
Daily exam	Lecture with presentation	Nutrient preparation .and plant behavior	The student will be able :to Explain the mechanisms of preparing nutrients in the soil and their availability to plants	3	7

Daily exam	Lecture with presentation	Effect of soil salinity .on root development	The student will be able to Explain how soil salinity affects the physiological processes of root growth.	3	8
		Follow up experiments and take .notes		3	9
		Follow up experiments and take .notes		3	10
		Discussing related research and how to present results and .graphs		3	11
		Analyze and present results		3	12
		Report writing		3	13
		Discuss the results .with all groups		3	14
		Scientific visit		3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
1. Soil-Plant Relations, 1987, authored by Dr. Radhi Kazim Al-Rashidi	Required textbooks (methodology if (available

	Main References (Sources)
	Recommended supporting books and references (scientific journals,
	Electronic references, websites

Description Soil Survey and Classification Course

Course name .1	
Soil survey and classification	
Course code .2	
SSCL411	
Semester/Year .3	
First - Fourth Stage	
Date of preparation of this description .4	
2024-1-31	
Available forms of attendance .5	
My presence	
Number of study hours (total) / Number of units (total) .6	
hours (2 theoretical + 3 practical) 3.5 units 5	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name :Salah Mahdi Sultan and Saadia Mahdi Saleh Emailsalah.sultan@uopbasrah.edu.iq	
Course objectives .8	
• Identify the factors and processes of soil formation • The most important international soil classifications • Modern American Quantitative Classification • Classification of Iraqi soils	Course objectives
Teaching and learning strategies .9	

.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Daily exam	Lecture with explanation and	A historical overview of soil classification in the world	To be able to understand and	2	1
Daily exam	Lecture with explanation and	The relationship between pedological sciences and the objectives of the classification year	To be able to understand and	2	2
Daily exam	Lecture with explanation and	Horizons: Genetic horizons	To be able to understand and	2	3
Daily exam	Lecture with explanation and	Superficial and subsurface diagnostic horizons	To be able to understand and	2	4
Daily exam	Lecture with explanation and	Genetic systems for soil classification: Russian systems	To be able to understand and	2	5
Daily exam	Lecture with explanation and	Canadian systems andFAO system, WRB	To be able to understand and	2	6
Daily exam	Lecture with explanation and	Old American System	To be able to understand and	2	7
Daily exam	Lecture with explanation and	American quantitative system	To be able to understand and	2	8
Daily exam	Lecture with explanation and	System structure and foundations for determining ranks	To be able to understand and	2	9
Daily exam	Lecture with explanation and	Inheritance and distinctive characteristics of soil orders	To be able to understand and	2	10

Daily exam	Lecture with explanation and	Inheritance and distinctive characteristics of soil orders	To be able to understand and	2	11
Daily exam	Lecture with explanation and	Soil Survey: Concepts and Objectives	To be able to understand and	2	12
Daily exam	Lecture with explanation and	Surveying degrees and works	To be able to understand and	2	13
Daily exam	Lecture with explanation and	Soil maps and soil survey reports	To be able to understand and	2	14
Daily exam	Lecture with explanation and	Land classification and uses	To be able to understand and	2	15
Practical part					
Daily exam	Lecture with explanation and	Field applications for soil description	To be able to understand and	3	1
Daily exam	Lecture with explanation and	How to prepare and interpret soil maps	To be able to understand and	3	2
Daily exam	Lecture with explanation and	Interpretation of aerial photographs and their use as maps	To be able to understand and	3	3
Daily exam	Lecture with explanation and	Step factor and drawing scale	To be able to understand and	3	4
Daily exam	Lecture with explanation and	Soil surveying tools and how to record information	To be able to understand and	3	5
Daily exam	Lecture with explanation and	Comparison of Iraqi and international soil survey reports	To be able to understand and	3	6
Daily exam	Lecture with explanation and	Implementation of field soil sweeping works	To be able to understand and	3	7

Daily exam	Lecture with explanation and	Implementation of field soil sweeping works	To be able to understand and	3	8
Daily exam	Lecture with explanation and	Implementation of field soil sweeping works	To be able to understand and	3	9
Daily exam	Lecture with explanation and	Soil Survey Report Numbers	To be able to understand and	3	10
Daily exam	Lecture with explanation and	Interpretation of soil survey results and mapping	To be able to understand and	3	11
Daily exam	Lecture with explanation and	Interpretation of soil survey results and mapping	To be able to understand and	3	12
Daily exam	Lecture with explanation and	Characteristics of Iraqi soil units	To be able to understand and	3	13
Daily exam	Lecture with explanation and	Numbers of the Iraqi soil units distribution map	To be able to understand and	3	14
Daily exam	Lecture with explanation and	Numbers of the Iraqi soil units distribution map	To be able to understand and	3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50	
Learning and teaching resources .12	
Pedology. Soil Survey and Classification. Dr. Walid .Khaled Hassan Al-Akeedi. 1986	Required textbooks (methodology if (available
Soil genesis and classification, Boul, et.al. 2005	Main References (Sources)
	Recommended supporting books and references (scientific journals,
	Electronic references, websites

Course Description Microscopic Soil Lovers

Course name .1
Microscopic soil lovers
Course code .2
SMIC414
Semester/Year .3
Fourth stage 2024-2025 \ semester
Date of preparation of this description .4
2024-2-5
Available forms of attendance .5
Attendance in classrooms
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) / 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Asst. Prof. Dr. Meiad Mahdi Al-JabriEmailmeiad.naama@uobasrah.edu.iq A.M. Suhaila Jawad Kadhimsuhailah.kadhim@uobasrah.edu.iq
Course objectives .8

Identify the groups of microorganisms -1 .that grow and are active in the soil Studying the biochemical activities taking -2 place in the soil, which lead to the analysis of the original organic materials and those added to the soil, and the preparation of nutritional elements for the plant, and the .role of this in soil activity and productivity Recognition -3 On the environmental conditions that increase the activity of economic microorganisms and benefit from .them in improving soil fertility Identify the benefits of biofertilization to -4 reduce the use of chemical fertilizers and .lower costs and pollution Identifying the possibility of using soil biota to -5 remove mineral and organic pollutants from the .soil	Course objectives

Teaching and learning strategies .9

• Theoretical lectures are held in classrooms for 15 weeks, including two monthly exams and daily exams. • Presentations and video materials. • Group discussions. • Learning based on problem solving, inquiry and brainstorming. • Report and project based learning.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning	watches	week
Oral discussion and questions	Lecture with explanation and	A brief history of the development of soil microbiology	Students will have knowledge and understanding	hours 2	the first
Daily exam	Lecture with explanation and	Soil microbiological groups (bacteria, their classification,	Students will be able to distinguish the forms of	hours 2	the second
Daily exam	Lecture with explanation, presentation and group	Microbial groups in soil (fungi, algae, lichens, (protozoa	Students will be able to distinguish between fungi and algae from	hours 2	the third

oral exam	• Lecture with explanation, presentation and group	The carbon cycle in nature, part 1	Students should have knowledge of the role of microorganisms in analyzing	hours 2	Fourth
Group discussion and daily exam	• Lecture with explanation and presentation	The carbon cycle in nature, part 2	Students will be able to understand the enzymatic contribution to the	hours 2	Fifth
	nothing	First monthly exam	nothing	hours 2	Sixth
Daily exam	Lecture with explanation and	Nitrogen cycle part 1	Students will have knowledge of the role of soil organisms	hours 2	Seventh
Daily exam	• Lecture with explanation and	Nitrogen cycle part 2	Students learn about biochemical transformations	hours 2	The eighth
Oral questions and group discussion	Lecture with explanation and	Biotransformations of phosphorus in soil	Students will gain knowledge of the role of soil organisms	hours 2	Ninth
Daily exam	Lecture with explanation and	Biotransformations of sulfur in soil	Students will have knowledge of the role of soil organisms	hours 2	tenth
	nothing	Second semester exam	nothing	hours 2	eleventh
Oral questions and group discussion	• Lecture with explanation and	soil enzymes	Students will be able to estimate soil enzyme activity and	hours 2	twelfth
Daily exam	• Lecture with explanation and presentation	Rhizosphere microbiology and pesticides	Students will have knowledge of the types of microorganisms in the	hours 2	thirteenth
Design a diagram to identify the type of relationship between two	Lecture with explanation and presentation	Environmental Interactions	Students will be able to distinguish between beneficial and harmful	hours 2	fourteenth

Presentation of a study on bioremediation with oral	• Lecture with explanation and	A brief overview of fertilizers and bioremediation	Students will be familiar with the application of sustainable	hours 2	fifteenth

Course Evaluation .11	
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc marks for attendance, participation and answering oral questions 5 marks for reports and projects 5 marks for the first monthly exam 10 marks for the second monthly exam 10 marks for the final exam 30 Total 60 points degrees for the practical part 40	
Learning and teaching resources .12	
Microbial Soil Biology. 1985. Authored by Dr. .Radhi Kazim Al-Rashidi	Required textbooks (methodology if (available
Microbiology of Soil. 1989 by Dr. Written Ghiath Muhammad Qasim and Dr. Muzhar	Main References (Sources)
Biofertilizer Technologies Book: Written by Hassan Ali Abdel Al-Rida 2022	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Soil Management Course Description

Course name .1
Soil management
Course code .2
SMAN419
Semester/Year .3
First - Fourth Stage
Date of preparation of this description .4

4 202-2-6
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
hours (2 theoretical + 3 practical) 3.5 units 5
Name of the course supervisor (if more than one name is mentioned) .7
Name: Prof. Dr. Ali Hamdi Dheyab :Emailali.dheyab@uobasrah.edu.iq Asst. Prof. Dr. Saadia Mahdi Saleh :Emailsaadia.salih@uobasrah.edu.iq
Course objectives .8

• The possibility of maintaining soil fertility and increasing its productivity with the aim of increasing agricultural production, which depends on the extent of understanding the .nature of the soil • As well as the nature of the application of	Course objectives

Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	

Theoretical part

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with presentation	Concepts and definitions	Introduce the student to the concepts and definitions of soil	2	1
Daily exam	Lecture with presentation	Land Use Planning Reasons for Interest in Land Use Planning	Enable the student to understand the relationship between soil management	2	2
Daily exam	Lecture with presentation	The most important modern concerns that fall within the	Clarifying the tasks of surveying and soil classification and linking	2	3
Daily exam	Lecture with presentation	Soil surveying and classification tasks, land use planning	Training students on methods of land evaluation and assessing its suitability	2	4
Daily exam	Lecture with presentation	Types of land valuation methods	Analyze the physical, chemical and biological properties of soils and	2	5

Daily exam	Lecture with presentation	Expressing soil properties	Enabling students to estimate the Story Index and interpret its results	2	6
Daily exam	Lecture with presentation	Story Guide / Examples and solutions on the Story	Developing students' capabilities in land management according to	2	7
Daily exam	Lecture with presentation	productive land suitability system	Enabling students to prepare technical reports on soil properties,	2	8
Daily exam	Lecture with presentation	productive land suitability system	Training students to use GIS techniques in collecting and analyzing	2	9
Daily exam	Lecture with presentation	Land suitability system	Developing students' skills in applying practical solutions to improve soil	2	10
Daily exam	Lecture with presentation	Land suitability system	Qualifying students to prepare comprehensive and integrated soil	2	11
Daily exam	Lecture with presentation	Soil suitability classification system Examples of	lucing students to th agricultural cycles appropriat for different soil types an	2	12
Daily exam	Lecture with presentation	Soil properties ratios to crop requirements	lop skills in interpreting th relationship between so properties and crop needs fo	2	13
Daily exam	Lecture with presentation	Administrative farm map	Use scientific methods to identify soil problems and choose the most	2	14
Daily exam	Lecture with presentation	Crop requirements ratios and appropriate soil	Preparing students for field and laboratory work by conducting practical	2	15
Daily exam	Lecture with presentation	Agricultural cycle	Training students to prepare agricultural administrative maps	2	16
Course Evaluation .11					
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50					

Description Fertilizer Technology Course

Course name .1
Fertilizer technologies
Course code .2

FETE424
Semester/Year .3
Second - Fourth stage
Date of preparation of this description .4
3-1-2024
Available forms of attendance .5
My presence
Number of study hours (total) / Number of units (total) .6
practical) 3.5 units 3 + theoretical hours (2 5
Name of the course supervisor (if more than one name is mentioned) .7
:Name :Haifa Jassim Hussein Emailhayfaa.hussein@uibasrah.edu.iq Nawal Issa Ashournawal.ashoor@uobasrah.edu.iq
Course objectives .8

• Definition and terminology of fertilizers • Methods of adding fertilizers • slow-release fertilizers • Increasing the efficiency of nitrogen fertilizers • Increasing the efficiency of phosphate fertilizers • Nano Fertilizers • sustainable agriculture • Smart agriculture • Biogas • Biofertilization • Biochar	Course objectives

Teaching and learning strategies .9	
.weeks of in-person lectures, including two monthly exams and daily exams 15	Strategy
Course structure .10	
Theoretical part	

Evaluation method	Learning method	Name of the unit or topic	Required	watches	week
Daily exam	Lecture with presentation	Definition and terminology of fertilizers		2	1

Daily exam	Lecture with presentation	❖ Methods of adding solid fertilizers ❖ The method of injustice ❖ liquid fertilizers ❖ Fertigation		2	2
Daily exam	Lecture with presentation	-release fertilizers		2	3
Daily exam	Lecture with presentation	Increasing the efficiency of nitrogen fertilizers		2	4
Daily exam	Lecture with presentation	Increasing the efficiency of phosphate fertilizers		2	5
Daily exam	Lecture with presentation	Introduction to nanomaterials, their definition and preparation		2	6
Daily exam	Lecture with presentation	Nano Fertilizers		2	7
Daily exam	Lecture with presentation	Definition of sustainable agriculture and its relationship with the environment		2	8
Daily exam	Lecture with presentation	Sustainable agriculture and recycling of plant and animal waste		2	9
Daily exam	Lecture with presentation	Smart agriculture concept		2	10
Daily exam	Lecture with presentation	Smart agriculture and climate change		2	11
Daily exam	Lecture with presentation	Biogas		2	12

Daily exam	Lecture with presentation	Factors affecting biogas production		2	13
Daily exam	Lecture with explanation and	Biofertilization		2	14
Daily exam	Lecture with explanation and	Biochar andits uses		2	15
Practical part					
practical report	Lecture with explanation and	Nitrogen fertilizer problems and ways to treat them		3	1
practical report	Lecture with explanation and	Ammonia volatility from nitrogen fertilizers		3	2
Daily exam	Lecture with explanation and	Testing the amount of volatile ammonia from urea fertilizer		3	3
practical report	Lecture with explanation and	Testing the amount of volatile ammonia from nitrogen fertilizers using: A. Different fertilizer sources B. Different application methods C. Different		3	6-5-4
practical report	Lecture with explanation and	Fertilizer manufacturing (nitrogenous, (phosphate, potassium		3	8-7
Daily exam	Lecture with explanation and	Phosphate fertilizer problems and ways to treat them		3	9
practical report	Lecture with explanation and	urea phosphate fertilizer with different .ratios of urea with phosphoric acid		3	10
practical report	Lecture with explanation and	Testing the efficiency of manufactured urea phosphate fertilizer in comparison with commercial fertilizers based on the available amount of phosphorus and		3	12-11
practical report	Lecture with explanation and	Study of the properties and composition of organic waste		3	13
Monthly exam	Exam	Exam		3	14

Discussion	Discussing practical reports	Discussing students' reports on the results of the experiments		3	15

Course Evaluation .11	
for each exam, daily exam 5 and reports 5 10 monthly ,Final exam of 50 Practical exam of 20, monthly exam of 10, practical experience reports of 10	
Learning and teaching resources .12	
Nothing	Required textbooks (methodology if available)
Soil organic matter: Edited by M. Schnitzer - Soil Research Institute, Agriculture Canada, Ottawa, Ont., Canada SU Khan - Chemistry and Biology Research Institute, Agriculture Canada, Ottawa, Ont., Canada Volume 8, Effect of climate change on soil and its components Mohamed Abdul-Rahemm and Hayfaa J.Hussein (2023).Lambert Academic Publishing Mineral and Organic Fertilization and its Effect on the Environment.2023. Mohamed Abdul-Rahem and Hayfaa J.Hussein. NOOr Publishing	Main References (Sources)
Soil Chemistry Book: Written by: Kazem Mashhout Awad: 1986 Biofertilizer Technologies Book: Written by Hassan Ali Abdul Redha 2022	Recommended supporting books and references (scientific (...journals, reports
https://www.amazon.com/Fertilizer-Technology-Management-Brahma-Mishra/dp/9389583942 . https://www.amazon.com/Fertilizers-Technology-Knowledge-Prem-Baboo/dp/B08RR9SCG9	Electronic references, websites

Course Description Land Reclamation

Course name .1
land reclamation
Course code .2
LARE416
Semester/Year .3
Second/Fourth Stage

Date of preparation of this description .4
2024/2/1
Available forms of attendance .5
presence Inside the classrooms
Number of study hours (total) / Number of units (total) .6
Two hours of theory (two units)
Name of the course supervisor (if more than one name is mentioned) .7
:Name Najla Japer Mohammed :Emailnajla.japer@uobasrah.edu.iq
Course objectives .8

• Study of the causes of soil degradation and the factors affecting it • Treatment and reclamation of soils affected by one of their production factors • Treatment and reclamation of sodic soils • Treatment and reclamation of calcareous soils • Treatment and reclamation of gypsum soils • Treatment and reclamation of stagnant soils	Course objectives

Teaching and learning strategies .9	
• .Theoretical lectures in classrooms • Presentations and video materials • Group discussions • Problem-based learning, inquiry, and brainstorming • Report and project based learning.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	• Theoretical lecture • Presentation • Group	The concept of land reclamation and its role in agricultural	The student will be able to identify the basic aspects of land reclamation negatively affected by one	2	1
Daily exam	• Theoretical lecture • Presentation Group discussion	Methods of reclamation of soils affected by .salts	The student will be familiar with the most important methods of .reclamation of saline soils	2	2

Daily exam	• Theoretical lecture • Presentation Group discussion	Stages of implementation of the saline soil reclamation .project	The student will be able to control the soils to be reclaimed by identifying the problems of these soils and developing stages for the implementation plan	2	3
Daily exam	• Theoretical lecture • Presentation Group discussion	First stage / field surveys and .investigations	The student will be able to implement the first stage .of the reclamation process	2	4
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Stage 2: Calculations, designs and .decisions	The student will be familiar with how to calculate and design the reclamation phase and	2	5
Report on the most important stages of reclamation and	• Theoretical lecture • Presentation Group discussion	Phase III / .Implementation Stage Four / Cultivation	The student will be able to carry out the reclamation process. Determine the appropriate crop to be	2	6
nothing	nothing	First month exam	nothing	2	7
Daily exam	• Theoretical lecture • Presentation Group discussion	Reclaimed soil .management	The student will be fully aware of the importance of developing appropriate plans to manage the project to ensure the success of the reclamation	2	8
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Results of experiments on reclamation of .saline lands in Iraq	The student should be familiar with the most important reclamation .projects in Iraq	2	9
Daily exam	• Theoretical lecture • Presentation Group discussion	Reclamation of .sodic soils	The student will be able to carry out the process of .reclamation of sodic soils	2	10
Daily exam	• Theoretical lecture • Presentation Group discussion	Reclamation of gypsum soils	The student will be able to carry out the process of reclamation of gypsum .soils	2	11
Oral discussion and questions	• Theoretical lecture • Presentation Group discussion	Reclamation of desert and sandy soils	The student will be able to carry out the process of reclamation of desert and .sandy soils	2	12
A report comparing reclamation methods with	• Theoretical lecture • Presentation Group discussion	Reclamation of .calcareous soils Reclamation of boggy soils	The student will be able to carry out the process of reclamation of calcareous .soils	2	13

nothing	nothing	Second month .exam	nothing	2	14
Daily exam	• Theoretical lecture • Presentation Group discussion	Acidic soil reclamation	The student will be able to carry out the process of .reclamation of acidic soils	2	15

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, .oral, monthly and written exams, reports, etc
marks for attendance, participation and answering oral questions 5
marks for reports and projects 5
marks for the first monthly exam 10
marks for the second monthly exam 10
marks for the final exam 30
Total 60 points
degrees for the practical part 40

Learning and teaching resources .12

1- Ahmed Haider Al-Zubaidi. 1989. Land Reclamation. Ministry of .Higher Education. University of Basra	Required textbooks (methodology if available)
Shafiq Ibrahim Abdel Aal and Amin Hamad Al-Rawi. 1981. Soil Reclamation and Improvement. Ministry of Higher Education and .Scientific Research. University of Sulaimani	Main References (Sources)
Agri-fax-liming of acid soil, Alberta Agriculture, Canada, Agdex534.1, June (1981).	Recommended supporting books and references
	Electronic references, websites

Course name .1
Land Reclamation/Practical
Course code .2
LARE416
Semester/Year .3
Second semester / 2024-2025
Date of preparation of this description .4
2025/01/02

Available forms of attendance .5	
Attendance in the laboratory and field visits	
Number of study hours (total) / Number of units (total) .6	
Three hours per week / one and a half (1.5) units	
Name of the course administrator (if more than one name is mentioned) .7	
Name: Assistant Professor Mohsen Naseh Hawshan	
Course objectives .8	
• the basic aspects of the reclamation Teaching students process • of studying the the basic aspects Teaching students .causes of soil degradation and the factors affecting it • treating and the basic aspects of Teaching students reclamation of soils affected by one of their production factors • treating and the basic aspects of Teaching students .reclamation of sodic soils • treating and the basic aspects of Teaching students reclamation of calcareous soils • treating and the basic aspects of Teaching students .reclamation of gypsum soils • treating and the basic aspects of Teaching students .reclamation of stagnant soils	Course objectives
Teaching and learning strategies .9	
• Practical lectures in the laboratory and field visits. • Presentations and video materials. • Group discussions. • Learning based on problem solving, inquiry and brainstorming. • Report and project based learning.	Strategy
Course structure .10	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Oral discussion and questions	• Practical lecture • Presentation • Group	Conducting an experiment to cultivate saline soil washed with	Students will be able to identify the key aspects of the reclamation	hours 3	the first
Quick test Students identify the appropriate category for a group of production	• Practical lecture • Presentation • Group	Conducting an experiment to cultivate saline soil washed with	Students will be .able to	hours 3	the second

Solve practical problems	• Practical lecture • Presentation • Solving problems	Conducting a laboratory experiment to wash	Students will be able to design and construct earthen ponds and handle related equipment .and supplies	hours 3	the third
Discussion between students and between them and the subject teacher or farm	• Explanation by the subject professor • Explanation	Conducting a laboratory experiment to wash saline soil in soil	Students will be able to design and construct earthen .ponds	hours 3	Fourth
Solve practical problems	• Practical lecture • View samples of materials and equipment • Performing	Wash filtrate analysis: estimation of electrical conductivity and positive and negative dissolved ions	Students will be able to identify the materials used and how to handle them .to create cages	hours 3	Fifth
Discussion between students and between them and the subject teacher or farm management in the event of a field visit Or evaluate models	• Explanation by the subject professor • Explanation by farm management in case of	Wash filtrate analysis: estimation of electrical conductivity and positive and negative dissolved ions	Students will be able to identify the materials used and how to handle .them	hours 3	Sixth
nothing	nothing	First month exam	nothing	hours 3	Seventh
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	Soil analysis in columns after the washing process: Estimation of electrical conductivity and positive and	Students will be able to identify materials used and how to handle laboratory .equipment	hours 3	The eighth
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	Soil analysis in columns after the washing process: Estimation of electrical conductivity and positive and negative dissolved ions	Students will be able to learn the basics of soil washing processes and the use of .special equipment	hours 3	Ninth

A report discussing the most suitable system for the local environment and the most feasible and usable among the closed culture systems, aquaponics, and biofloc locally	• Practical lecture • Presentation • Video presentations	Soil analysis in columns after the washing process: Estimation of electrical conductivity and positive and negative dissolved	Students will be able to learn the basics of soil washing processes and the use of .special equipment	hours 3	tenth
Oral discussion and questions	• Practical lecture • Presentation • Video	Conducting an experiment to reclaim sodic soils, drawing soil	Students will be able to learn the basics of soil washing processes	hours 3	eleventh
Assign students to transport a group of live fish using different .means	• Practical lecture • Presentation • Video	Conducting experiments to reclaim gypsum soils	Students will be able to identify methods and equipment for	hours 3	twelfth
Oral discussion and questions	• Practical lecture • Presentation • Video presentations	Conducting experiments to reclaim sandy soils	Students will be able to understand the basics of monitoring equipment operation and	hours 3	thirteenth
nothing	nothing	Second monthly exam	nothing	hours 3	fourteenth
nothing	• Group discussion • Answering students'	A systematic journey to one of the reclamation .projects in Iraq	nothing	hours 3	fifteenth

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, .oral, monthly and written exams, reports, etc
marks for attendance, participation and answering oral questions 5
marks for reports and projects 5
marks for the first monthly exam 5
marks for the second monthly exam 5
marks for the final exam 20
Total 40 marks 60 marks for the theoretical part

Learning and teaching resources .12

There is no textbook	Required textbooks (methodology if available)
Ahmed Haider Al-Zubaidi. 1989. Land Reclamation. .Ministry of Higher Education. University of Basra	Main References (Sources)
Shafiq Ibrahim Abdel Aal and Amin Hamad Al-Rawi. Soil Reclamation and Improvement. Ministry of .1981 Higher Education and Scientific Research. University of Sulaimani	Recommended supporting books and references (...scientific journals, reports)

https://www.fao.org/soil /ar	Electronic references, websites

Plant Nutrition Course Description

Course name .1	
Plant nutrition	
Course code .2	
PLNU426	
Semester/Year .3	
Second - Fourth Phase / 2024-2025	
Date of preparation of this description .4	
2025/01/02	
Available forms of attendance .5	
Attendance in classrooms	
Number of study hours (total) / Number of units (total) .6	
hours of theory + 3 hours of practical work 3.5 units 2	
Name of the course supervisor (if more than one name is mentioned) .7	
:Name:Email Jabri -Asst. Prof. Dr. Miad Mahdi Ne'meh Al meiad.naama@uobasrah.edu.iq Ms. Hoda Ahmed Yassin Al-Janabi huda.yassen@uobasrah.edu.iq	
Course objectives .8	
• Learn about the importance of nutrients for plant .growth and increased productivity • Learn about the physiological functions of each nutrient, its deficiency symptoms, and how to .treat it • Factors affecting nutrient availability • Learn the theories of absorption, movement, and assimilation of nutrients and water within plant .tissues	Course objectives
Teaching and learning strategies .9	

• Theoretical lectures in classrooms. • Presentations and video materials. • Group discussions. • Report and project based learning.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Oral discussion and questions	• Theoretical lecture • Presentation • Group	The importance of plant nutrition and nutrient partitioning	The student will have knowledge of the benefits of nutrients and their	hours 2	the first
Report on the most suitable and locally used production units	• Theoretical lecture • Presentation • Group	Plant Nutrition Media - Nutrition and Plant Growth Relationship of	The student will be able to create nutritional media for plant growth	hours 2	the second
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Nutrient readiness Ways nutrients reach the root	The student understands how nutrients reach the root and is able to	hours 2	the third
Earthen pond design project	• Theoretical lecture • Presentation • Group	Theories of nutrient absorption by plants	The student will be aware of how nutrients enter .plant tissues	hours 2	Fourth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	External and internal factors affecting plant growth	The student will be able to solve environmental problems that	hours 2	Fifth
	nothing	First semester exam	nothing	hours 2	Sixth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Hypotheses explaining the relationship between root and	The student will be able to distinguish between the importance of	hours 2	Seventh
Oral discussion and questions	• Theoretical lecture • Presentation • Group	The relationship between the rate of nutrient absorption and	The student will be able to determine the concentration of nutrients that	hours 2	The eighth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Mechanisms of bioabsorption of nutrients	The student will be able to identify the mechanism of absorption of each	hours 2	Ninth

	• Theoretical lecture • Presentation • Group	Theories of ion crossing the plasma membrane	The student understands the behavior of each nutrient within	hours 2	tenth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	optionality in nutrient absorption	The student will be able to distinguish the effect of each element on the	hours 2	eleventh
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Water relations in plants Mechanism of water movement	The student understands the behavior of water inside the plant and	hours 2	twelfth
	nothing	Second semester exam	nothing	hours 2	thirteenth
Oral discussion and questions	• Theoretical lecture • Presentation • Group	Nitrogen and sulfur metabolism in plant tissues	The student will have knowledge of the behavior of nitrogen and sulfur	hours 2	fourteenth
nothing	• Group discussion • Answering students'	Micronutrients and their deficiency symptoms in plants	The student will be able to solve the problem of harmful effects	hours 2	fifteenth

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc
marks for attendance, participation and answering oral questions 5
marks for reports and projects 5
marks for the first monthly exam 10
marks for the second monthly exam 10
marks for the final exam 30
Total 60 points
degrees for the practical part 40

Learning and teaching resources .12

,Plant Nutrition Guide1988. Yousef Mohammed Abu Dahi and Mu'ayyad Ahmed Al-Younis.	Required textbooks (methodology if available)
Mengel, K. and E. A. Kirkby, 1984	Main References (Sources)
Plant Nutrition and Soil Fertility Manual. Benton Jones Jr	Recommended supporting books and references (scientific journals, reports...)
Scientific articles published on theResearchGate platform	Electronic references, websites

Course name .1

Plant Nutrition/Practical
Course code .2
PLNU426
Semester/Year .3
Fourth stage/second semester/2024-2025
Date of preparation of this description .4
2025/01/02
Available forms of attendance .5
Attendance in the laboratory and field visits
Number of study hours (total) / Number of units (total) .6
Three hours per week / one and a half (1.5) units
Name of the course administrator (if more than one name is mentioned) .7
Name: Ms. Huda Ahmed Yassin :Email huda.yassen@uopbasrah.edu.iq
Course objectives .8

• Understand the importance of essential nutrients .for plant growth and increased productivity • Identify the symptoms that appear on plants as a .result of a deficiency of each nutrient • Knowing how to treat nutrient deficiencies through nutrient solutions or adding appropriate .fertilizers to the plant • Applying the knowledge gained through sand and hydroponic farm experiments, while monitoring plant performance and analyzing the .impact of nutrient deficiencies on it	Course objectives

Teaching and learning strategies .9

• Practical lectures in the laboratory and field visits. • Presentations and video materials. • Group discussions. • Learning based on problem solving, inquiry and brainstorming. • Report-based learning and daily exam.	Strategy

Course structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
--	• Presentation • Group discussion • Video	Preparation of nutrient solutions	The student will have the knowledge of how to prepare	hours 3	the first
Daily exam	• Presentation • Group discussion • Video presentations	Sand and hydroponic farms experience	The student will be able to prepare solutions correctly and apply them to meet the needs of	hours 3	the second
Daily exam	• Presentation • Group discussion • Video presentations	Symptoms of nutrient deficiency, diagnosis and treatment	The student will be able to understand the symptoms of nutrient deficiency in plants and	hours 3	the third
Daily exam	• Presentation • Group discussion • Video	:Phosphorus Physiological functions, diagnosis and	The student is able to diagnose the apparent symptoms, analyze	hours 3	Fourth
Submit a plant monitoring report in both sand and .hydroponic farms	• Presentation • Group discussion • Video presentations	:Potassium Physiological functions, diagnosis and treatment of	The student is able to diagnose the apparent symptoms, analyze the plant, and	hours 3	Fifth
Oral questions	• Presentation • Group discussion • Video presentations Symptoms of	Calcium and :Magnesium Physiological Functions, Diagnosis and Treatment of	The student is able to diagnose the apparent symptoms, analyze the plant, and follow appropriate	hours 3	Sixth-Seventh
nothing	nothing	First monthly exam	nothing	hours 3	The eighth
Daily exam	• Presentation • Group discussion • Video presentations Symptoms of	:Sulfur Physiological functions, diagnosis and treatment of deficiency symptoms	The student is able to diagnose the apparent symptoms, analyze the plant, and follow appropriate solutions to fill the	hours 3	Ninth
Oral questions	• Presentation • Group discussion • Video presentations Symptoms of nutrient	Physiological :Iron functions, diagnosis and treatment of deficiency symptoms	The student is able to diagnose the apparent symptoms, analyze the plant, and follow appropriate solutions to fill the	hours 3	tenth

Reporting nutrient deficiency symptoms	• Presentation • Group discussion • Video presentations Symptoms of nutrient	:Manganese Physiological functions, diagnosis and treatment of deficiency symptoms	The student is able to diagnose the apparent symptoms, analyze the plant, and follow appropriate solutions to fill the	hours 3	eleventh
Daily exam	• Presentation • Group discussion • Video	:Zinc Physiological functions, diagnosis and	The student is able to diagnose the apparent symptoms, analyze	hours 3	twelfth
	• nothing	Second semester exam With a scientific trip	nothing	hours 3	thirteenth
Reporting nutrient deficiency symptoms	• Presentation • Group discussion • Video presentations Symptoms of	:Copper Physiological functions, diagnosis and treatment of deficiency	The student is able to diagnose the apparent symptoms, analyze the plant, and follow appropriate	hours 3	fourteenth
Submit a final report on nutrient deficiency .symptoms	• Presentation • Group discussion • Video	Boron and :molybdenum physiological functions,	The student is able to diagnose the apparent symptoms, analyze	hours 3	fifteenth

Course Evaluation .11

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc
marks for attendance, participation and answering oral questions 5
marks for reports 5
marks for the first monthly exam 5
marks for the second monthly exam 5
marks for the final exam 20
Total 40 points
degrees for the theoretical part 60

Learning and teaching resources .12

Practical Plant Nutrition. Yousef Mohammed - .Abu Dahi1989. Ministry of Higher Education	Required textbooks (methodology if available)
,Plant Nutrition Guide1988. Yousef Mohammed Abu Dahi and Mu'ayyad Ahmed Al-Younis. Ministry of Higher Education and Scientific Research. University of Basra. Directorate of Dar	Main References (Sources)
Mengel, K. and E. A. Kirkby, 1984	Recommended supporting books and references (scientific journals, reports...)
in and articles published ResearchResearchGate journals	Electronic references, websites

Desertification course description

Course name .1					
desertification					
Course code .2					
DESE420					
Semester/Year .3					
Second/Fourth Stage					
Date of preparation of this description .4					
2024/2/9					
Available forms of attendance .5					
My presence					
Number of study hours (total) / Number of units (total) .6					
hours (2 theoretical) / 2 units 2					
Name of the course supervisor (if more than one name is mentioned) .7					
:Name Nihad Shaker Sultan :Emailnuhad.sultan@uobasrah.edu.iq					
Course objectives .8					
• An introductory study of desertification, its causes, soil degradation, the factors affecting it, and its areas of spread locally and .globally • Treating each case of desertification, .depending on its degree and production level			Course objectives		
Teaching and learning strategies .9					
.weeks of face-to-face lectures, interspersed with monthly and daily exams 15				Strategy	
Course structure .10					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	week
Daily exam	Lecture with explanation	Introduction to the concept of desertification and	Introducing students to the phenomenon of	2	1

Daily exam	Lecture with explanation	The harms of desertification, its risks and the losses	Introducing students to the dangers of	2	2
Daily exam	Lecture with explanation	The problem of desertification, description of the	Introducing students to the problems of	2	3
Daily exam	Lecture with explanation	Origin of desertification. Vegetation cover,	Explain the origin of desertification to students and	2	4
----------	----------	----------	First monthly exam	2	5
Daily exam	Lecture with explanation	Combating desertification. Agriculture and	Introducing students to ways to reduce and combat	2	6
Daily exam	Lecture with explanation	Sand dunes as a manifestation of desertification. Local	Learn about sand dunes, their most important features,	2	7
Daily exam	Lecture with explanation	Sand dunes and sand dunes. Methods and means of stabilizing	To familiarize students with the factors that cause	2	8
Daily exam	Lecture with explanation	Methods and means of measuring desertification and	Learn about the most important methods for	2	9
Daily exam	Lecture with explanation	Drought and aridity. Definition of drought and aridity	Introducing students to drought and aridity, their	2	10
----------	----------	----	Second month exam	2	11
Daily exam	Lecture with explanation	Global warming. Concept of global warming. Causes of	Learn about global warming, its importance to the	2	12
Daily exam	Lecture with explanation	. to treat retention	Introducing students to the most important means	2	13
Daily exam	Lecture with explanation	Water harvesting. Water harvesting concept. Water	Introducing students to the concept of water	2	14
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Course Evaluation .11	
.weeks of face-to-face lectures, interspersed with monthly and daily exams 15	
Learning and teaching resources .12	
2- . Desertification. Land Degradation in Arid	Required textbooks (methodology if available)

1- Desertification in the Arab World. Ibrahim Nahal. Arab Development .Institute. 1987 3-FAO. 1994. Water Harvesting for improved agricultural production	Main References (Sources)
	Recommended supporting books and references (...scientific journals, reports)
	Electronic references, websites