Republic of Iraq
Ministry of higher education & scientific research
Supervision and scientific evaluation directorate
Quality assurance and academic accreditation

Academic Program Specification Form
For The Academic

University: Northern Technical University
College: Technical Agricultural College of Mosul
Department: Desertification Control Technologies
Date of form completion: 8/1/2024

Signature

Dr. Faris Faisal Abdulghani
Head of Department
Date: 8 / 1 / 2024

Signature

Assit. Lec. Mahmood Shaker Mahmood
Dean`s Assistant for Scientific Affairs
Date: 8 / 1 / 2024

Assit. Lec. Haneen Mowfak Ahmeed
Quality Assurance and University Performance Manager

Date: 8 / 1 / 2024
Signature

صادق

The Dean
Prof. Dr. Shihab Ahmed Yossuf

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFOMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This academic program description provides a brief summary of the most important characteristics of the program and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program

1.Teaching Institution	Northern Technical University
2.University Department/Centre	Technical Agricultural College / Mosul
3.Programme Title	**Department of Combating Deserification Techniques**
4.Title of Final Award	Bachelor of Agricultural Technical Engineer
5.Modes of Attendance offered	Decisions
6.Accreditation	Ministry of Higher Education Scientific Research
7.Other external influences	Scientific updates Panel discussions on climate change and combating desertification
8.Date of production of this specification	8/1/2024
9.Aims of the Programme	

The program aims to prepare qualified technical staff who possess some qualities such as:

Increase water use efficiency, dry agriculture, water reuse, water harvesting, reduce the impact of wind erosion and stabilize sand dunes.
High skills in various sciences and disciplines of anti-desertification techniques in controlling remote irrigation management and smart irrigation, designing and building structures for water harvesting facilities, using computers in predicting wind erosion, designing structures and facilities for stabilizing sand dunes.

Promoting the concepts of combating desertification and the extent of its comprehensiveness of local, regional and global damages.

Preparing the graduate to be successful in completing his scientific career by obtaining certificates after the technical bachelor's degree and
providing broad attention to the
problems that arise in Professional practice including teamwork, leadership, occupational safety, ethics, service and economics.

10.Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

1. Master soil science (physics, chemistry and soil fertility) which is in contact with the management of techniques to combat desertification.
2. Mastering the sciences of water management (weather, irrigation methods and methods, water harvesting, water reuse).
3. Diagnosis of signs of desertification, resistance to wind erosion and stabilization of sand dunes.
4. dry agriculture and conservation agriculture drought-resistant plant varieties

B. Subject-specific skills

1. Ability to diagnose desertification.
2. Ability Manage operations of controlled irrigation and smart irrigation.
3. The ability to manage water in the design of water harvesting facilities.
4. The ability to manage water in water reuse (trocar water and waste water).
5. The ability to use modern technical applications and tools in the completion of necessary tasks.

C. Thinking Skills

1. brainstorming.
2. Ability to analyze.
3. Problem-solving ability.
4. Ability to deduce

D. General and Transferable Skills (other skills relevant to employability and personal development)

1. Ability to work in a team.
2. Ability to communicate effectively.
3. Effective influence on society and the labor market through Training and development programs related to specialization at various levels.

Teaching and Learning Methods

Lecture.

- **Lab.**
- **Systematic training.**
- **Projects**
- **Summer training.**

Assessment Methods
Daily , Monthly , Final examination and weekly reports

11. Programme Structure

Level/Year	Course or Module Code	Course or Module Title	Credit rating	Credit hours one hour per week	
				theoretical	practical
Level 1	TAMO1	Combating Deserification Techniques	Autumn	14	21
Level 1	TAMO1	Combating Deserification Techniques	spring	14	14
Level 2	TOMO2	Combating Deserification Techniques	Autumn	15	21
Level 2	TOMO2	Combating Deserification Techniques	spring	12	20
Level 3	TAMO3	Combating Deserification Techniques	Autumn	15	16
Level 3	TAMO3	Combating Deserification Techniques	spring	13	15
Level 4	TAMO4	Combating Deserification Techniques	Autumn	12	15
Level 4	TAMO4	Combating Deserification Techniques	spring	12	16

Study Level (First)						
Compulsory Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	Human Rights and Democracy	2	0	2		NTU100
	English language (1)	2	0	2		NTU101
	Computer Principles(1)	1	1	2		NTU102

	Arabic Language	2	0	2		NTU103
	Elective			2		NTU
College Requirements	Mathematics	1	0	1		TAMO101
	Engineering Drawing	0	3	1		TAMO102
	Plane surveying	1	3	2		TAMO103
	General Chemistry	1	3	2		TAMO104
	Elective	2	0	2		FINE
Department Requirements	Fundamental of soil science	2	3	3		101 DES
	Soil Physics	2	3	3		102 DES
	Forestry	2	3	3		DES103
	Climate of dry lands	2	-	2		104 DES
	Soil Chemistry	2	3	3		105 DES
	Elective			3		DES
	Elective			3		DES
	Elective			2		DES
Total units of the academic level		29	31	40		

Study Level (First)						
Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	Sport	1	1	2		NTU104
	French Language	2	0	2		NTU105
College Requirements	Economies Natural Resources	2	0	2		TAMO151
	Agricultural Extension	2	0	2		TAMO152

Department Requirements	General plant	2	3	3		DES151
	Principles of Animal Production	2	3	3		DES152
	Plant Physiology	1	3	2	DES151	DES153
	Field crops	2	3	3	DES151	DES154
	Geology	2	3	3	DES101	DES155
	Soil management	2	3	3	DES101	DES156
Total units of the academic level		19	18	25		
Required Units (2 universities + 2 colleges + 8 departments)				12		

Study Level (Second))						
Compulsory Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	English language (2)	2	0	2		NTU200
	Computer Principles(2)	1	1	2		NTU201
	Arabic Language	2	0	2		NTU202
		2	0	2		NTU203
	Professional ethies	2	0	2		NTU204
College Requirements	Organic Chemistry	2	3	3	TAMO104	TAMO201
	Agriculture Statistics	1	2	2		TAMO202
	Elective			2		FINE
Department Requirements	Dry lands Farming	2	3	3		DES٢٠١

	Remote sensing	2	3	3		DES٢٠٢
	Hydrology	2	3	3		DES٢٠٣
	Fertilizers & Fertility	2	3	3		DES٢٠٤
	Geomorphology	2	3	3		DES٢٠٥
	Fruit Production at Deserts	2	3	3		DES٢٠٦
	Elective			2		DES
	Elective			3		DES
	Elective			3		DES
Total units of the academic level		24	25	43		

Study Level (Second)						
Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
College Requirements	Agro nanotechnology	1	2	2		TAMMOTO51
	Food Industry	1	3	2		FINE252
Department Requirements	Tractors & Farming Equipment	2	3	3		DES٢٥١
	Agricultural pastes	2	3	3		DES٢٥٢
	Nursery & Propagation	1	3	2		DES٢٥٣
	Forage crops & pastures	2	3	3		DES٢٥٤
	Tissue Culture	2	3	3		DES٢٥٥
	Optimum Use of Soil and Water	2	3	3		DES٢٥٦

Total units of the academic level	**13**	**23**	**21**		
Required Units (2 faculties + 8 departments)					

Study Level (third)						
Compulsory Courses						
Type of Requirement	**Course Name In English**	**Number of theoretical hours**	**Number of practical hours**	**Number of Units**	**Smoother, if any**	**Code**
College Requirements	**Computer Applications (3)**	**1**	**2**	**2**		**TAMO301**
	Biochemistry	**2**	**3**	**3**	**TAMO104**	**TAMO302**
	Elective			**2**		**FINE**
Department Requirements	**Wind erosion and its preventive methods**	**2**	**3**	**3**	**DES102**	**DES٣٠١**
	Cultivation of desert lands	**2**	**3**	**3**		**DES٣٠٢**
	Harvesting of water	**2**	**3**	**3**	**DES102**	**DES٣٠٣**
	Soil conservation	**2**	**2**	**3**	**DES102**	**DES٣٠٤**
	principals of Irrigation & Drainage	**2**	**3**	**3**		**DES٣٠٥**
	Groundwater management	**2**	**3**	**3**		**DES٣٠٦**
	Sustainable development in desert areas	**2**	**0**	**2**		**DES٣٠٧**
	Summer Training					**DES٣08**
	Elective			**3**		**DES**
	Elective			**2**		**DES**
	Elective			**2**		**DES**
Total units of the academic level		**17**	**19**	**34**		

Study Level (third)						
Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
College Requirements	Recycling of Agricultural Wastes	1	2	2		TAMO٥١
	Organic Agriculture	1	2	2		TAMOA٥٢
Department Requirements	Horticulture	2	3	3		DES٣٥١
	Conditioned cultivation	2	2	3		DES٣٥٢
	Wild animals	2	0	2		DES٣٥٣
	Socio- issues in dry lands	2	0	2		DES٣٥4
	Natural reserves	2	0	2		DES٣55
	Water , soil and plant relationship	2	3	3		DES٣٥6
	Water Reuse	2	-	2		DES٣٥7
	Desert Management	2	0	2		DES٣٥8
Total units of the academic level		18	12	23		
Required Units (2 faculties + 7 departments)				9		

Study Level (Fourth)						
Compulsory Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	Scientific research methodology	2	0	2		NTU400
College Requirements	Experimental Design	1	3	2	TAMO202	TAMO401
	Computer Applications (4)	1	3	2		TAMO402
	Elective	2	0	2		FINE

Department Requirements	Crop growth Modeling	2	3	3	DES102	DES٤٠١
	Field Irrigation Method	2	2	3	DES101	DES٤٠٢
	Soil reclamation	2	2	3	DES303	DES٤٠٣
	Wind erosion prediction models	2	3	3		DES٤٠٤
	Fluid modeling	2	3	3		DES٤05
	Dry lands plants	2	0	2		DES٤06
	Project	0	3	1		DES٤٠7
	Seminar	1	0	1		DES٤٠8
	Elective			2		DES
	Elective			3		DES
	Elective			3		DES
Total units of the academic level		17	22	35		

Academic Level (Fourth) Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
College Requirements	Safety	2	0	2		TAMO451
	Agricultural marketing	2	0	2		TAMO452
Department Requirements	Building of dry lands	2	2	3		DES٤٥١
	Conservation Agriculture	1	2	2		DES٤٥٢
	Dry lands pastures	2	2	3		DES٤٥3
	Database Management	2	2	3		DES٤٥4
	Geographic Information Systems (GIS)	2	3	3		DES٤٥5
Total units of the academic level		15	11	18		
Required Units (2 faculties + 8 departments)				9		

13.Personal Development Planning

Faculty members must be within the prescribed staff and according to the ratio of students to the number of faculty members and must Competence should have a role to cover all curricula, There must be a capacity to manage the college adequately to accommodate levels of interaction, student counseling, counseling, university, vocational and developmental service activities, and interaction with practitioners and professionals as well as employers.

14.Admission criteria

- Average for graduates of preparatory school / scientific branch / agricultural vocational branch.

15. Key sources of information about the programme

1- Book and textbook
2- Scientific catalogues
3- Scientific research and publishing paper
4- Internet

Curriculum Skills Map

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Programme Learning Outcomes

Year/level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
first	DES101	Soil principles	Essential	√				√					√			√			
	DES104	Arid Zone Climate	Essential		√		√	√	√			√					√		
	DES102	Soil physics	Essential	√				√				√	√			√			
	DES103	Forest	Essential			√		√				√		√		√	√		
	DES105	Soil chemistry	Essential	√				√				√	√			√			
Second	DES201	Dry farming	Essential	√			√	√					√		√		√	√	
	DES202	Remote sensitization	Essential			√					√		√		√		√	√	
	DES203	Water Management	Essential		√					√	√		√		√		√	√	
	DES206	Fruit production of desert areas	Essential				√	√					√	√				√	
	DES204	Fertility and fertilization	Essential	√				√					√	√		√			
	DES205	Geomorphology	Essential	√				√				√		√			√		

Third	**DES355**	**Nature Reserves**	**Essential**				√											√	
	DES305	**Foundations of irrigation and puncture**	**Essential**		√			√			√		√		√			√	
	DES357	**Water Reuse**	**Essential**		√				√					√				√	
	DES303	**Water harvesting**	**Essential**		√				√					√		√		√	
	DES301	**Wind erosion and ways to resist it**	**Essential**			√		√			√	√				√		√	
	DES356	**The relationship of soil to water and plant**	**Essential**	√				√			√	√					√		
	DES304	**Soil maintenance**	**Essential**			√		√			√		√			√		√	
	DES	**Summer Training**	**Essential**			√		√					√			√		√	
Forth	**DES406**	**Arid Zone Plants**	**Essential**			√		√					√				√		
	DES401	**Crop Growth Modeling**	**Essential**								√		√					√	
	DES402	**Field irrigation methods**	**Essential**		√				√	√		√	√					√	
	DES407	**Research Project**	**Essential**			√		√						√				√	
	DES408	**Seminars**	**Essential**			√		√			√	√		√			√	√	
	DES453	**Arid Zone Pastures**	**Essential**				√	√			√		√	√					
	DES403	**Land Reclamation**	**Essential**	√				√			√	√		√		√		√	
	DES404	**Wind erosion**	**Essential**			√		√			√	√			√	√		√	

	prediction models																		
DES451	Arid Zone Installations	Essential		√			√			√			√		√		√		
DES405	Fluid Movement Modeling	Essential		√			√			√	√			√	√	√			
DES455	Geographic Information Systems	Essential			√				√					√		√	√		

Course Description Form

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities. It must be linked to the program description.;

ducational institution	**Northern Technical University**
Scientific Department / Center	**Combating Deserification Techniques**
Course Name/Code	**Dry planting**
Available Attendance Forms	**Theoretical + Practical**
Semester/Year	**Quarterly**
Number of credit hours (total)	**75**
Date of preparation of this description	**٨/1/20٢٤**
Course Objectives Introducing the student to the specifications of the dry environment, the method of production, the factors affecting it, and the modern techniques used in the investment and exploitation of dry lands.	

Course Outcomes and Methods of Teaching, Learning and Assessment
A - Cognitive objectives 1- The student has knowledge about dry areas and their nature 2- Identify the available techniques to cope with drought 3- Identifying the nature of plants and their types and the extent to which they are affected by the environment of this region. **B - Skills objectives of the course.** 1- The use of techniques to confront desertification and moisture tension

2- The possibility of managing agricultural and livestock activity in dry agriculture areas in order to achieve the best possible efficiency
3- Developing means, equipment and machinery in line with the nature of dry areas

Teaching and learning methods

Theoretical + Practical

Assessment methods

1- Theoretical exams (daily, monthly, final)
2- Oral examinations
3- Participation inside the hall
4- Homework

Emotional and value goals

1- What the student studies should be commensurate with his tendencies and thinking directions
2- The student should feel the importance of correcting refractive errors in the eye
3- The student should listen carefully to the professor's explanation
4- The student should feel what cognitive excellence and excellence mean
5- The student should know the impact of science and scientists
6- The student should care about respecting the time and class system

General and qualifying skills transferred (other skills related to employability and personal development).

1- Types of communication in the field of work
2- The ability to express and convey ideas clearly and confidently
3- Teamwork.

Course Structure					
The week	**Hours**	**Required Learning Outcomes**	**Unit / Subject Name**	**Method of education**	**Evaluation method**
1	2 hours	Add Learning Outcomes	Drought and the nature of **dry agriculture**: drought, arid and semi-arid areas, the nature of drought and its causes, arid regions of the world	theoretical	Exams
2	2 hours	Add Learning Outcomes	**factors affecting production in dry agriculture:** germination, soil, climate, temperature, light energy, atmospheric pressure, wind, rainfall,	theoretical	Exams
3	2 hours	Add Learning Outcomes	**Cloud intensification and rain projection in agricultural fields:** methods of implementation, requirements required to implement the condensation process, existing uses of cloud condensation and rain projection.	theoretical	Exams
4	2 hours	Add Learning Outcomes	**Climate classification of the** Arab world : agricultural climatic regions in the Arab world,	theoretical	Exams
5	2 hours	Add Learning Outcomes	**The role of water in plant growth:** the importance of water for plants, factors affecting the absorption of water by plants, transpiration	theoretical	Exams
6	2 hours	Add Learning Outcomes	**Dehydration (**water tension): its effects on the plant, plant acclimatization of water tension	theoretical	Exams
7	2 hours	Add Learning Outcomes	**Development of dry agriculture:** economic and social conditions in drying areas.	theoretical	Exams
8	2 hours	Add Learning Outcomes	**Crop breeding under dry cultivation conditions**	theoretical	Exams
9	2 hours	Add Learning Outcomes	**field processes and agricultural mechanization in dry farming,**	theoretical	Exams
10	2 hours	Add Learning Outcomes	Agriculture in dry agriculture : municipal agriculture, mechanical farming, recent trends **in agriculture**, mulch cultivation , stuble mulch farming, Minimum tillage	theoretical	Exams
11	2 hours	Add Learning Outcomes	**Equipment and machinery suitable for crop production in dry agriculture**	theoretical	Exams
12	2 hours	Add Learning Outcomes	**Moisture preservation and soil maintenance:** factors affecting soil moisture conservation, methods used in moisture preservation, soil maintenance methods from erosion, erosion damage	theoretical	Exams
13	2 hours	Add Learning Outcomes	**Agricultural operations in dry farming,** fertilizing under dry cultivation conditions	theoretical	Exams
14	2 hours	Add Learning Outcomes	**Pests in dry farming, weeds,** insects	theoretical	Exams
15	2 hours	Add Learning Outcomes	**Agricultural rotations:** their benefits and advantages of the agricultural cycle in dry agriculture	theoretical	Exams

13. Infrastructure	
1 Required textbooks	Lectures according to the prescribed curriculum
2 Main references (sources)	Dry agriculture - its foundations - elements and investment / d. Abdullah Qasim
Recommended books and references (scientific journals, reports ,....)	
B Electronic references, websites	

14. Course Development Plan
Working on training an academic staff capable of researching books and sources that dealt with delving into the fields of computers, networks and information technology and exerting the features of this experience to our dear students in order to enrich the scientific arena. 2 Activating the issue of scientific twinning between the corresponding departments at the local and regional levels 3 Activating electronic communication between our college and other college and corresponding entities, for the purpose of delivering information For the student as soon as possible. 4 Work on the dissemination of distinguished graduation projects for second-year students in order to push the scientific movement in the direction Right

https://ntu.edu.iq/ar/قسم-تقنيات-مكافحة-التصحر/