Republic of Iraq
Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation
Department Accreditation

Academic program and course description guide

2025

Introduction:

The academic program serves as a distinguished educational service aimed at developing the skills and competencies of students and graduates to meet the evolving demands of the job market. This program relies on a series of educational and training procedures based on carefully designed curricular elements, focusing primarily on preparing graduates to be academically and professionally qualified to meet the increasing requirements in various fields of work.

The academic program undergoes regular evaluation processes, including both internal and external assessments by specialized institutions, such as external accreditation programs. These evaluations aim to ensure the quality and efficiency of the program and its successful achievement of educational goals.

The academic program description is a fundamental document that provides an overview of the program's objectives, content, and educational outcomes. It acts as a guiding tool that helps map out the path to achieving these objectives. The description reflects the program's educational vision and strategy and is considered one of the key elements in ensuring that the program receives academic accreditation according to local and international standards.

This updated version of the academic program description reflects the changes and developments in higher education in Iraq and globally, incorporating ongoing revisions of course content in accordance with the latest academic standards. It also considers technological advancements and modern trends in education, both theoretically and practically, enhancing the program's ability to adapt to the new requirements of the job market.

The academic program description has been prepared according to accredited evaluation models (both theoretical and practical), in alignment with decisions issued by academic bodies, such as decision number 2906/3 dated 2023/5/3. These updates aim to ensure that the program aligns with global accreditation requirements, particularly in technical fields that require continuous adaptation to advancements.

In this context, we emphasize the importance of accurately writing academic program descriptions and designing curricula according to the latest educational trends. This description is a cornerstone for improving academic performance and ensuring the quality of education, serving as an effective tool to achieve academic excellence and meet the needs of the job market.

Academic Program Specification Form For The Academic Year 2024-2025

University: Northern Technical University

College: Hawija Technical Institute

Dept.: Water Resources Technique

Date Of Form Completion :7-10-2024

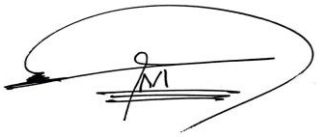
Department Head Name/ Dr. Idan Ibrahem Ghdhban

Date: ***7/10/2024***

Signature 

Dean 's Assistant for scientific Affairs: Dr.Mhammed Ch. L.

Date: 7/10/2024

Signature 

File checked by

Quality Assurance and University Performance Division

Name of Director of Quality Assurance and University Performance Division: Hamza Omar Siddiq

Date 10/8/2024

Signature 

Dean 's Name P.Dr. Omer K. A.

Data : 8/10/2024

Signature 

TEMPLATE FOR PROGRAMME SPECIF

PROGRAMME SPECIFICATION

This program Specification provides a concise summary of the main features of the program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provide. It is supported by a specification for each course that contributes to the program.

1. Teaching Institution	Northern Technical University / Hawija Technical Institute
2. University Department / Center	Water Resources Technique / Water Projects Operation Branch
3. Program Title	Technical Sciences
4. Title of Final Award	Technical Diploma
5. Modes of attendance offered	Courses
6. Accreditation	NO
7. Other external influence	
8. Date of production/revision of this specification	5-2-2025
9. Aims of the Program	
Graduation and training of qualified technical personnel to run water purification and treatment projects, conduct periodic checks on raw and refined water, and the ability to lay and connect pipes to water distribution networks and sewage collection systems.	

10.Learning Outcomes , Teachings, Learning and Assessment Method

A. Knowledge and Understanding

A1- Introducing the student to the methods of operating drinking water purification projects

A2. The ability to extend and connect pipes to water distribution networks and wastewater collection systems

A3. Develop students' capabilities in planning and implementing water projects in a sustainable manner.

A4. Enhance students' understanding of the challenges and problems that water projects may face and how to deal with them.

A5. Stimulating scientific research in the field of operating water projects and exchanging knowledge and experiences between students and professors.

A6. Supporting the sustainable development of the water sector by preparing qualified graduates to improve the quality of water services in communities.

B. Subject – specific skills

B1- Introducing the student to the methods of operating drinking water filtration projects

B2- Introducing the student to how to determine the amount of chemicals added for the purposes of filtration and sterilization and to monitor and verify the concentrations of substances present in the water during the treatment stages.

B3- Introducing the student to the parts of machines and equipment used in the project parts and pumping stations.

B4- Introducing the student to the operation and maintenance of wastewater treatment plants

B5- Acquire the necessary knowledge about designing and implementing water projects in effective and sustainable ways.

B6- Develop planning and management skills to ensure the successful operation of water projects.

B7- Understanding evaluation and monitoring methods to ensure the quality of water services.

B8- Learn about the latest Technique and innovations in the field of operating water projects.

B9- Develop the ability to solve problems and make correct decisions in the context of operating a water project.

Teaching and learning Methods

1- Giving lectures

2- Scientific visits

3- Practical experiments in the laboratory 4- The use of modern means of clarification and education
Assessment methods
1- The paper-based test 2- Oral exam 3- The practical test 4- Graduation projects
C. Thinking Skills
C1- Increasing the students' self-confidence C 2- Managing time and not wasting it C3 - Increasing the spirit of competition and enthusiasm among students
Teaching and Learning Methods
1- Giving lectures 2- Discussion sessions 3- Guidance seminars
Assesment Methodes
1- Theoretical test 2- The practical test 3- Discussion seminars
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- The graduate's ability to operate drinking water filtration and water treatment projects D2- The graduate's ability to operate wastewater treatment projects D3- It qualifies the graduate to conduct chemical and biological tests for raw and treated water D4- The graduate's ability to use surveying and land surveying equipment D5- Enhancing awareness of the importance of preserving water resources and improving the efficiency of their use in water projects D6- Developing scientific research and innovation capabilities in the field of operating water projects.
Teaching and Learning Methods
1- Giving lectures 2- Scientific visits 3- Practical experiments in the laboratory 4- The use of modern means of clarification and education
Assesment Methodes
1- Theoretical tests

2- Practical tests

11. Program structure

First Stage	Course or Module code	Course or Module name	Credit rating	
			Theory	Practical
1	NTU100	Human Rights	1	0
2	NTU106	Democracy	1	0
3	NTU101	English language	2	0
4	NTU102	Computer principles 1	1	2
5	NTU103	Computer principles 2	1	2
6	NTU104	Arabic language	2	0
7	NTU105	Sport	1	1
8	NTU107	French language	2	0
9	TIH100	Mathematic 1	2	0
10	TIH101	Mathematic 2	2	0
11	TIH102	Mechanical Workshop	0	3
12	WRTO100	Fluid mechanics principles	2	2
13	WRTO101	Fluid mechanics applications	2	2
14	WRTO102	Analytical chemistry	1	2
15	WRTO103	Sanitary chemistry	1	2
16	WRTO104	Principles of Microbiology	1	2
17	WRTO105	microorganisms in water	1	2
18	WRTO106	Engineering drawing 2D	0	3
19	WRTO107	Engineering drawing 3D	0	3
20	WRTO111	Geology	1	2
21	WRTO112	Geographic Information Systems GPS	1	2
22	WRTO113	Concrete technology	1	2
23	WRTO114	Water pollution	1	2
Second Stage	Course or Module code	Course or Module name	Credit rating	
			Theory	Practical
1	NTU200	**English language**	2	0
2	NTU201	**Ethics of the Profession**	2	0
3	WRTO200	**drawing of water treatment plants**	0	3
4	WRTO201	**drawing of waste water plants**	0	3

5	WRTO202	**Drinking water purification**	2	2
6	WRTO203	**Disinfection of drinking water**	2	2
7	WRTO204	**physical treatment of Sewerage water**	1	2
8	WRTO205	**chemical treatment of Sewerage water**	1	2
9	WRTO206	**Water distribution networks**	1	2
10	WRTO207	**sewage networks**	1	2
11	WRTO208	**Equipment of Water and Wastewater Treatment (Mechanical)**	1	2
12	WRTO209	**Equipment of Water and Wastewater Treatment (electrical)**	1	2
13	WRTO210	**Project**	0	3
14	WRTO211	**Introduction to survey**	1	3
15	WRTO212	**Survey applications**	1	3
16	WRTO213	**Quantitative survey**	1	2
17	WRTO214	**Water hydrochemistry**	1	2
18	WRTO216	**Water sustainability**	1	2
19	WRTO217	**Quality indexes**	1	2

12.Personal Development Planning

1- Updating the curricula in line with scientific development
2- Preparing training courses for the affiliates to increase their scientific skills
3- Focusing on the practical aspect and summer training to increase the practical experience of the graduate

13. Admission criteria

Graduates of the preparatory school, the scientific branch

14.Key sources of information about the programme
Hawija Technical Institute website

Curriculum Skills Map																			
Please check the boxes corresponding to the individual Programme learning outcomes aer being being Assessed																			
Learning outcomes required of the program																			
Year/ Level	**Course Code**	**Course Title**	**Core (C) Title or Option (P)**	**Knowledge and understanding**				**Subject – specific skill**				**Thinking skill**				**General and transferable skills (or)Other skillsrelevent to employability And personal development**			
				A 1	**A 2**	**A 3**	**A 4**	**B 1**	**B 2**	**B 3**	**B 4**	**C 1**	**C 2**	**C 3**	**C 4**	**D 1**	**D 2**	**D 3**	**D 4**
First stage	**NTU100**	**Human Rights**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU106	**Democracy**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU101	**English language**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU102	**Computer principles 1**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU103	**Computer principles 2**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU104	**Arabic language**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU105	**Sport**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU107	**French language**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	TIH100	**Mathematic 1**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	TIH101	**Mathematic 2**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	TIH102	**Mechanical Workshop**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

	WRTO100	**Fluid mechanics principles**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO101	**Fluid mechanics applications**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO102	**Analytical chemistry**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO103	**Sanitary chemistry**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO104	**Principles of Microbiology**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO105	**microorganisms in water**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO106	**Engineering drawing 2D**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO107	**Engineering drawing 3D**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO111	**Geology**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO112	**Geographic Information Systems GPS**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO113	**Concrete technology**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO114	**Water pollution**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Second stage	**NTU200**	**English language**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	NTU201	**Ethics of the Profession**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO200	**drawing of water treatment plants**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO201	**drawing of waste water plants**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO202	**Drinking water purification**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO203	**Disinfection of drinking**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

		water																	
	WRTO204	**physical treatment of Sewerage water**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO205	**chemical treatment of Sewerage water**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO206	**Water distribution networks**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO207	**sewage networks**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO208	**Equipment of Water and Wastewater Treatment (Mechanical)**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO209	**Equipment of Water and Wastewater Treatment (electrical)**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO210	**Project**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO211	**Introduction to survey**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO212	**Survey applications**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO213	**Quantitative survey**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO214	**Water hydrochemistry**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO216	**Water sustainability**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	WRTO217	**Water Quality indexes**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW : PROGRAMME REVIWE

COURSE SPECIFICATION

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, demonstrating whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program.:

1. Teaching Institution	Northern Technical University - Hawija Technical Institute
2. University / Department / Center	Water Resources Technique / Water Projects Operation Branch
3. Course Title /code	Hydraulic 1+2
4. Programme(s) to which it contributes	
5. Mode of attendance offered	
6. Semester / Year	First Level/1st 2nd semester
7. Number of hours tuition (Total)	120
8. Date of production / revision of this specification	**5-2-2025**
9. Aime of this course	Teaching student s the effect of fluids in the state of movement and stability and their relationship to the expenses of open and closed channels and determining the capacity of the required pumps and selecting them to benefit from them in irrigation sites and other relevant sites

10. Learning Outcomes, Teaching, Learning and Assessmentmethode

A- Knowledgeand Understanding

A1- Know the properties of fluid (gas and liquid)
A2- Know the properties of a stationary fluid
A3- Knowing the movement of fluids
A4- Know the effect of fluid movement
A 5- Know the equations and laws of a stationary fluid
A6- Knowing the equations and laws of fluid motion

B- Subject-specific skills

B1- Acquiring the skill of calculating the pressure of static fluids on submerged objects
B2 - The skill of calculating the velocity of flow and the value of the flow rate
B3 - The skill of calculating the pressures applied inside the pipes
B 4- The skill of calculating the flow in open channels

Teaching and learning Methodes

1- Theoretical lectures
2- Laboratory Experiments
3- Scientific visits

Assessment Methodes

1- Theoretical test
2- The practical test
3- Reports

C- Thinking Skills

C1- Increase the student's self-confidence
C 2- Managing time and not wasting it
C 3- Increasing the spirit of competition
C4-

Teaching and learning Methodes

1- Giving lectures
2- Discussion sessions
3- Using modern means (calculator and internet)

Assessment Methodes

1- practical test

2- Discussion sessions

D- **General and Transferable Skills (other skills relevant to employability and personal development**

D1- The ability to calculate the static pressure of liquids on submerged bodies

D2 - The ability to calculate the speed of flow and the amount of discharge through channels and pipes

D3- The ability to calculate pressures on pumps and equipment

D4- The ability to calculate the efficiency of the pumps

11. Course Structure

Week Unit Teaching Method of Assessment	Hours	Required Learning Outcomes	Name/Module or Topic Title	Teaching Method	Assessment Method

1st semester	
Week no.	**Subjects**
1	Importance of engineering drawing-Applying AutoCAD in engineering drawing – Measurement of drawing sheet-Overview of AutoCAD window.
2	Types of lines in engineering drawing- Use of pull-down menus for lines and texts.
3+4	Drawing of basic objects.
5+6	Modifying of drawings – Use of status bar.
7+8+9	Drawing operations –Dimensioning – Applications.
10+11+12+13	Isometric drawing – Drawing a shape containing a square, rectangle, circle and triangle.
14+15	Theory of projection – Orthographic projection for simple shapes.
2nd semester	
1+2	Dimensions on isometric drawings and objects.
3+4+5	Drawing of third view by use of other two views.
6+7+8	Sectioning of objects – Hatching – Types of hatching lines – Drawing of sectioned views.

9+10+11	Drawing of sectioned views by Knowing one view.
12+13	Drawing of partly sectioned views.
14+15	Applications and projects.

12. Infrastructure

1. Required prescribed books	Fluid mechanics, experiments in hydraulics
2. Main references (sources)	Fluid mechanics
a. Recommended books and references (scientific journals, reports,...)	ASCE journal
b. Electronic references, Internet sites...	https://t.me/SolutionManual2000

13. Course development plan