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 Engineering College \ Kirkuk

Department: Environment and Pollution Technologies Engineering

Date of form completion: 7/1/2024

Dr.Sami Aslan	**Dr.Muntader A. Shareef**	**Dr.Qahtan Adnan Ali**
Dean's Name	Dean's Assistant for Scientific Affairs	Head of Department
Date: / /	**Date** 9/1/2024	**Date:** / /
Signature	**Signature**	**Signature**

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Quality Assessment and performance Assessment Division Manager

Date: 8/1/2024

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Date: / /

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TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

This programmer specification provides a concise summary of the main features of the programmer 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 provided. It is supported by a specification for each course that contributes to the programmer

1. Teaching Institution	**Northern Technical University**
2. University Department/Centre	**Technical Engineering College - Kirkuk**
3. Programmer Title	**Environment and Pollution Technologies Engineering**
4. Title of Final Award	**Bachelor**
5. Modes of Attendance offered	**Bologna process + Annual + Courses**
6. Accreditation	**Accreditation Board for Engineering and Technology (ABET)**
7. Other external influences	**1. Training courses for students to develop students' professional skills** **2. Field visits** **3. Summer training for third-year students**
8. Date of production/revision of this specification	**07/01/2024**
9. Aims of the Programme: The program aims to prepare qualified technical staff who possess some qualities such as	

- **Providing students with the basics of scientific knowledge in the field of environmental engineering, pollution treatment and improving their professional abilities in the direction of analytical and creative thinking and modern experimental methods in formulating and solving problems.**
- **Preparing well-qualified engineers to promote environmental and pollution engineering activities and the ability to manage dealing with them in all life facilities.**
- **Conducting scientific research of an academic nature to keep pace with the global scientific march and research of an applied nature to translate engineering knowledge and its theories into a working reality by addressing the problems that the country suffers from in all fields.**
- **Contribute in one way or another in terms of design, supervision, follow-up and advice for the reconstruction of the country with its various engineering sectors.**

10.Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. It aims to understand the concept of environment and pollution A2- It aims to know the operation and work of laboratory equipment.

A3. It aims to know the special experiences in everything related to environmental pollution and its control.

A4. It aims to know the procedures to help reduce pollution and ways to control it.

B. Subject-specific skills

B1. The ability to design and conduct experiments.

B2. It aims to use modern and advanced means to deliver the largest amount of knowledge to the student.

B3. It aims at introducing the student to the concept of environment and pollution testing samples.

B4. Aims to familiarize students with the diagnosis of theories and general principles in the study

Teaching and Learning Methods

Theoretical and practical lectures

- **Operation of laboratories and workshops**

- **Reports and assignments**
- **Daily and monthly exams**
- **Summer training during the summer vacation period.**

Assessment methods

- **Daily tests**
- **Semester exams (theory + practical)**
- **Discussing periodic reports**
- **Discussing graduation research projects**
- **Final exams**

C. Thinking Skills

C1. Creating educational staff that can be relied upon in state institutions within the specialization

C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.

C3. Work to create the requirements of the labor market and raise the economic capacity.

C4. The ability to make decisions.

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

D1. Communication and conversation skills such as English language and presentation skill.

D2. Teamwork skills.

D3. Leadership skills and responsibility.

D4. Self-education skills and self-reliance.

Teaching and Learning Methods

- **Lecture**
- **Laboratory**
- **Development courses**
- **periodic seminars**

• **Learning seminars**
Assessment methods
• **Periodic tests.** • **Feedback methods.**

11. Program Structure

Bologna / First Level – First Stage				
Type Of Requirement	**Course or Module Code**	**Course or Module Title**	**Course Hours**	
			Theoretical	**Practical**
University requirements	**NTU100**	**Human Rights and Democracy**	**2**	**–**
	NTU101	**English Language I**	**2**	**–**
College requirements	**TECK102**	**Engineering Drawing**	**1**	**2**
	TECK101	**Derivatives and Integral**	**4**	**–**
Department requirements	**ENPE111**	**Analytical Chemistry**	**3**	**2**
	ENPE112	**Principles of Environmental**	**4**	**–**
Bologna / First Level – Second Stage				
University requirements	**NTU103**	**Arabic Language**	**2**	**–**
	NTU102	**Computer**	**2**	**1**
College requirements	**TECK104**	**Physics**	**3**	**-**
	TECK103	**Workshop**	**-**	**3**
Department requirements	**ENPE114**	**Organic Chemistry**	**2**	**3**
	ENPE113	**Engineering Mechanics**	**4**	**-**
	ENPE115	**Applications of Derivatives and Integral**	**4**	**-**
Courses / Second Level – First Stage				

Type Of Requirement	Course or Module Code	Course or Module Title	Course Hours	
			Theoretical	Practical
University requirements	NTU200	English II	2	-
College requirements	TECK201	Mathematics I	3	-
	TECK203	Physics	2	-
Department requirements	ENPE210	Environmental Chemistry	2	3
	ENPE211	Computer Programming	1	2
	ENPE212	Fluid Mechanics I	2	3
	ENPE214	Environmental Geology	2	-
	ENPE216	Environmental Statics		
	ENPE217	Principles of Surveying	1	2
Courses / Second Level – Second Stage				
University requirements	NTU201	Professional Ethics	2	-
College requirements	TECK202	Mathematics II	3	-
	TECK204	Summer Training I	-	-
Department requirements	ENPE218	Micro-Organism Techniques	2	3
	ENPE219	Ecology	3	2
	ENPE215	Hydrology	3	2
	ENPE213	Fluid Mechanics II	2	2
	ENPE220	Strength of materials	2	-
Courses / Third Level – First Stage				
Type Of Requirement	Course or Module Code	Course or Module Title	Course Hours	
			Theoretical	Practical

University requirements	**NTU 300**	**English III**	**2**	**-**
College requirements	**TECK300**	**Numerical and Engineering Analysis**	**3**	**-**
Department requirements	**ENPE310**	**Water Pollution**	**2**	**3**
	ENPN311	**Soil Pollution & Remediation**	**2**	**3**
	ENPE318	**Health And Occupational Safety**	**2**	**-**
	ENPE312	**Air Pollution and Control**	**2**	**3**
	ENPE320	**Analysis Of Environmental Samples**	**1**	**2**
Courses / Third Level – Second Stage				
Type Of Requirement	**Course or Module Code**	**Course or Module Title**	**Course Hours**	
			Theoretial	**Practical**
University requirements	**-**	**-**	**-**	**-**
College requirements	**TECK301**	**Numerical and Engineering Analysis**	**2**	**2**
	TECK302	**Summer Training II**	**-**	**-**
Department requirements	**ENPE316**	**Radioactive -Pollutants & Control**	**2**	**3**
	ENPE314	**Mass transfer**	**2**	**3**
	ENPE315	**Environmental Thermodynamics**	**2**	**-**
	ENPE313	**Air Pollution**	**2**	**-**
	ENPE317	**Hydraulic**	**2**	**2**
	ENPE321	**Drawing In Computer**	**2**	**2**
	ENPE319	**Oil Pollution**	**2**	**2**
Annual / Fourth Level – First Stage				
Type Of Requirement	**Course or Module Code**	**Course or Module Title**	**Course Hours**	
			Theoretical	**Practical**
University requirements	**NTU400**	**English III**	**2**	**-**
	TECK401	**Engineering Project I**	**-**	**3**

College requirements	TECK40·	Engineering Project Management	3	-
Department requirements	ENPE410	Solid waste management	2	3
	ENPE411	Control of water pollutants	2	3
	ENPE412	Control Of Waste Water Pollutants	2	3
	ENPE413	Control Systems and Precision Machines	2	3
	ENPE418	Modeling and Simulation	1	2
	ENPE419	Advanced Statistical Analysis	1	2
Annual / Fourth Level – Second Stage				
Type Of Requirement	Course or Module Code	Course or Module Title	Course Hours	
			Theoretical	Practical
University requirements	NTU401	Scientific Research Methodology	2	-
College requirements	TECK402	Engineering Economy	2	-
	TECK403	Engineering Project II	-	3
Department requirements	ENPE414	Water Distribution and Sewage	3	2
	ENPE415	Environmental Impact Assessment	2	-
	ENPE416	Environmental Legislation	2	-
	ENPE417	Risk Management	2	3
	ENPE420	Membrane Technology	2	-
	ENPE421	Environmental Sustainability	2	-

12. Personal Development Planning

- **The department strives to be a forerunner in the field of preparing engineers specializing in environmental and pollution engineering, who take upon themselves to provide a suitable environment for humans by adopting modern technologies and participating in building and developing infrastructure, providing consultancy and technical support for planning and implementation programs, and have the ability to design, implement and operate projects of a nature health and social benefit.**
- **The department seeks to achieve an appropriate knowledge content for students that will make them able to assume the responsibilities of Iraq's needs of engineers in the future so that they will be able and efficiently to serve Iraq in sectors that need the specializations of environmental engineering and pollution.**
- **Organizing courses within the college or courses within institutions of higher education and scientific research.**

• Scientific seminars and symposia.

13. Admission criteria.

- **Scientific branch**
- **The minimum admission rate**

14. Key sources of information about the program

- **Curricula of teaching methods adopted by the Northern Technical University**
- **Methodological books.**
- **Auxiliary resources (secondary books)**
- **The Internet, self-education sites, reputable international universities sites, and Iraqi universities sites**
- **Local and international articles and books - ABET Academic Accreditation Program**

Curriculum Skills Map																				
Please tick relevant boxes where individual programme Learning Outcomes are being assessed																				
Programme Learning Outcomes																				
Year/ Level	**Course code**	**Course title**	**Basic or Optional**	**Knowledge and understanding**				**Subjectspecific Skills**				**Thinking Skills**				**General and Transferable Skills (or) Other Skills relevant to employability and personal development**			
				A1	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
Bologna First Level First Stage	**NTU100**	**Human Rights**	Basic						√			√	√	√	√		√	√	√
	NTU101	**English Language I**	Basic						√			√	√	√	√	√	√	√	√
	TECK102	**Engineering Drawing**	Core		√			√	√			√	√	√	√		√	√	√
	TECK101	**Derivatives and Integral**	Core						√		√	√	√	√	√		√	√	√
	ENPE111	**Analytical Chemistry**	Core					√	√			√	√	√	√		√	√	√
	ENPE112	**Principles of Environmental**	Basic						√		√	√	√	√	√		√	√	√
	NTU103	**Arabic Language**	Basic	√			√			√	√	√	√	√	√		√		√

Bologna First Level Second Stage	**NTU102**	**Computer**	Basic	√				√			√	√	√	√			√	√	√
	TECK104	**Physics**	Core	√			√	√			√	√	√	√		√	√	√	√
	TECK103	**Workshop**	Core	√				√			√	√	√	√	√		√	√	√
	ENPE114	**Organic Chemistry**	Core	√				√			√	√	√	√	√		√	√	√
	ENPE113	**Engineering Mechanics**	Supportive	√				√		√	√	√	√	√			√	√	√
Courses Second Level First Stage	**NTU200**	**English II**	Basic		√			√			√	√	√	√	√	√		√	
	TECK201	**Mathematics I**	Basic		√				√			√	√	√	√			√	√
	TECK203	**Physics**	Basic		√			√	√			√	√	√	√		√	√	√
	ENPE210	**Environmental Chemistry**	Basic		√				√			√	√	√	√	√		√	√
	ENPE211	**Computer Programming**	Basic		√				√			√	√	√	√	√		√	√
	ENPE212	**Fluid Mechanics I**	Basic		√				√		√	√	√	√	√			√	√
	ENPE214	**Environmental Geology**	Basic		√				√		√	√	√	√	√		√	√	√
	ENPE216	**Environmental Statics**	Basic		√	√			√	√	√	√	√	√	√		√	√	√
	ENPE217	**Principles of Surveying**	Basic	√	√	√			√	√	√	√	√	√	√		√	√	√
Courses Second Level Second Stage																				
	NTU201	**Professional Ethics**	Basic						√		√	√	√	√	√		√	√	√

	TECK202	**Mathematics II**	Basic		√	√			√	√	√	√	√	√	√		√	√	√
	TECK204	**Summer Training I**	Basic		√			√	√			√	√	√	√		√	√	√
	ENPE218	**Micro-Organism Techniques**	Basic		√	√			√	√	√	√	√	√	√		√	√	√
	ENPE219	**Ecology**	Basic	√	√	√		√	√		√	√	√	√	√		√	√	√
	ENPE215	**Hydrology**	Basic						√		√	√	√	√	√		√	√	√
	ENPE213	**Fluid Mechanics II**	Basic						√		√	√	√	√	√		√	√	√
	ENPE220	**Strength of materials**		√	√			√	√	√	√	√	√	√		√	√	√	√

Courses Third Level First Stage	**NTU 300**	**English III**	Basic						√			√	√	√	√		√	√	√
	TECK300	**Numerical and Engineering Analysis**	Basic						√			√	√	√	√		√	√	√
	ENPE310	**Water Pollution**	Basic						√			√	√	√	√		√	√	√
	ENPN311	**Soil Pollution & Remediation**	Basic	√	√	√			√	√	√	√	√	√	√		√	√	√
	ENPE318	**Health And Occupational Safety**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE312	**Air Pollution and Control**	Basic	√	√	√		√	√		√	√	√	√	√		√	√	√
	ENPE320	**Analysis Of Environmental Samples**	Basic		√	√			√	√	√	√	√	√	√		√	√	√

Courses Third Level Second Stage	**TECK301**	**Numerical and Engineering Analysis**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	TECK302	**Summer Training II**	Basic	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√
	ENPE316	**Radioactive - Pollutants & Control**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE314	**Mass transfer**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE315	**Environmental Thermodynamics**	Basic		√	√			√	√	√	√	√	√	√		√	√	√
	ENPE313	**Air Pollution**	Basic	√	√	√	√		√		√	√	√	√	√		√	√	√
	ENPE317	**Hydraulic**	Basic		√			√	√			√	√	√	√		√	√	√
	ENPE321	**Drawing In Computer**	Basic						√			√	√	√	√	√	√	√	√
	ENPE319	**Oil Pollution**	Basic	√			√	√			√	√	√	√		√	√	√	√

Annual Fourth Level First Stage	**NTU400**	**English III**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	TECK401	**Engineering Project I**	Basic		√	√	√		√		√	√	√	√	√		√	√	√
	TECK40·	**Engineering Project Management**	Basic						√			√	√	√	√		√	√	√
	ENPE410	**Solid waste management**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE411	**Control of water pollutants**	Basic		√			√	√			√	√	√	√		√	√	√

	ENPE412	**Control Of Waste Water Pollutants**	Basic	√			√		√		√	√	√	√	√		√	√	√
	ENPE413	**Control Systems and Precision Machines**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE418	**Modeling and Simulation**	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	ENPE419	**Advanced Statistical Analysis**	Basic						√			√	√	√	√	√	√	√	√
Annual Fourth Level Second Stage	**NTU401**	**Scientific Research Methodology**	Basic		√	√	√		√		√	√	√	√	√		√	√	√
	TECK402	**Engineering Economy**	Basic	√	√	√		√	√		√	√	√	√	√		√	√	√
	TECK403	**Engineering Project II**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE414	**Water Distribution and Sewage**	Basic	√	√	√	√		√	√	√	√	√	√	√		√	√	√
	ENPE415	**Environmental Impact Assessment**	Basic	√			√	√			√	√	√	√		√	√	√	
	ENPE416	**Environmental Legislation**	Basic		√	√			√	√	√	√	√	√	√		√	√	√
	ENPE417	**Risk Management**	Basic	√	√	√		√	√		√	√	√	√	√		√	√	√
	ENPE420	**Membrane Technology**	Basic																
	ENPE421	**Environmental Sustainability**	Basic	√	√	√		√	√		√	√	√	√	√		√	√	√