

**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

2025–2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al-Nahrain University

Faculty/Institute: College of Information Engineering

Scientific Department: Department of Computer Networks Engineering

Academic or Professional Program Name: Master of Networks Engineering and Internet Technologies

Final Certificate Name: M.Sc. in Networks Engineering and Internet Technologies

Academic System: Semester Based

Description Preparation Date: 24\4\2025

File Completion Date: 24\6\2025

Signature: 

Head of Department Name:

Assist. Prof. Dr. Ammar D. Jasim

Date: 24\6\2025

Signature: 

Scientific Associate Name:

Assist. Prof. Dr. Mohammed E.

Abdulsatter

Date: 24\6\2025

The file is checked by:  **Dr. Mohamed A. Jabbar**

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 29/6/2025

Signature: 



Approval of the Dean

Prof. Dr. Hikmat N. Abdullah

1. Program Vision

To be a realistic and distinguished program in Computer Networks engineering in Baghdad and the region that is recognized for high-quality Computer Networks engineers.

2. Program Mission

1. Productive and practitioner Engineers.
2. Professional Engineers capable of solving the realistic projects who apply technological solutions to business needs.
3. Researchers that contribute to the development and innovation of the computer networking fields.
4. Prepared for both technical (design ability, laboratory experiences, use of engineering tools) and non-technical (teamwork, communication) elements that support economic and social development of the local community.
5. Learners who can always improve the professional knowledge.

3. Program Objectives

- Mobile Operator companies
- Telecommunications and Networking companies
- Government organizations datacenters
- Internet Service Providers
- Network Academic Institutes

4. Program Accreditation

Not Available

5. Other external influences

Ministry of Higher Education and Scientific Research

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Department Requirements	12	24	66.67%	
Research	1	12	33.33%	
Summer Training	None			
Other				

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

7. Program Description

Basic Courses

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
2024/2025 1st Level	ACNE501	Advanced Computer Networks	3	
	NESY502	Networks Embedded Systems	3	
	ENGL503	English Language	2	
	NTTH504	Networks Traffic Theory	3	
	WCAN505	Wireless Communications & Networks	3	
	SRME525	Scientific Research Methodology	2	

Optional Courses

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
2024/2025 1st Level	CLCO511	Cloud Computing	3	
	MALE519	Machine Learning	3	
	BDAN514	Big Data Analysis	3	

	AITH507	Advanced Information Theory	3	
	ANES518	Advanced Networks Security	3	
	WSIT521	Wireless Sensor Networks and Internet of Things	3	

8. Expected learning outcomes of the program

Knowledge

- A1. Essential mathematical analysis appropriate to help model and analyze networks and systems
- A2. Introducing software programming concepts, object-oriented programming and operating systems
- A3. The role of Information Technology, communications, and Science underlying network layering systems
- A4. Essential management and design principles appropriate to relevant network equipment and associated software.

Skills

- B1. Ability to apply appropriate scientific principles, mathematical and computer-based methods for analyzing general network systems.
- B2. Ability to solve numerical problems encountered when applying mathematics, statistics and computing
- B3. Be creative, organize tasks into a structured form, and understand the evolving state of knowledge in a rapidly developing area.
- B4. Ability to plan, conduct and write a report on a project or assignment, prepare, and oral presentation in related fields.

Practical Skills

- C1. Ability to use appropriate mathematical methods or IT tools, and program a computer to solve problems.
- C2. Ability to use relevant laboratory equipment and network devices and tools and analyze the results critically.
- C3. Design, build and test a small to intermediate LAN and WAN networks.

C4. Ability to research into advanced networking and systems, project management methods, and present work.

9. Teaching and Learning Strategies

1. Explain the scientific material to students in detail.
2. Involve students in solving mathematical problems.
3. Discussion and dialogue on topics related to the subject.

10. Evaluation methods

Directly through subject specific assessment, and indirectly by observing tools and their effective use to enhance the student's overall performance.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Electronics and Communications Engineering	Circuits and Electronics Systems Engineering			1	
Professor	Computers Engineering	Computer and Communications Engineering			1	
Assistant Professor	Computers Engineering	Information Network technologies			1	
Assistant Professor	Physics	Electromagnetics\ Stripped Antenna			1	
Assistant Professor	Electronics and Communications Engineering	Spread Spectrum Systems			1	

Assistant Professor	Computers Engineering	Information Technology Engineering			1	
Assistant Professor	English \ Linguistics	English Literature			1	
Assistant Professor	Electrical Engineering	Communications Engineering			1	

Professional Development

Mentoring new faculty members

New faculty members need to join teaching methods training before teaching a class, which is mandatory to all faculty members to pass the training and teaching eligibility. After then, they should be members of some department committees, so they can learn the administrative part additional to the lecturing and demonstrating students.

Professional development of faculty members

All of the faculty members in the College of Information Engineering have access to a variety of professional development programs. A number of skill-development workshops, seminars, lectures, and training courses are presented by prominent speakers in many fields.

12. Acceptance Criterion

Competitive Exam

13. The most important sources of information about the program

<https://coie-nahrain.edu.iq/en/>

14. Program Development Plan

Developing a Master's program in Networks and Internet Technologies requires a comprehensive and flexible approach to keep pace with the rapid advancements

in the field. The plan aims to provide graduates with the advanced knowledge and skills necessary for research, innovation, and leading complex technical projects.

Here are the main pillars that can be included in this plan:

1. Restructuring the Curriculum

The curriculum must be modern and integrated, combining theoretical foundations with practical applications. Courses can be divided into several specialized tracks to allow students to focus on specific areas:

- * **Cybersecurity Track:** Includes topics such as advanced network security, penetration testing, and malware analysis.
- * **Cloud Computing Track:** Focuses on cloud architecture, cloud security, and service management.
- * **AI in Networking Track:** Addresses the applications of artificial intelligence and machine learning in network management and performance optimization, such as Software-Defined Networking.

2. Enhancing Practical and Research Aspects

To ensure graduates are prepared to meet the demands of the job market, the plan should focus on practical aspects:

- * **Applied Projects:** Integrating practical projects into each course, where students design and implement real-world network solutions.
- * **Research Projects:** Encouraging students to participate in research projects based on real-world problems, in collaboration with industry or academic institutions.
- * **Master's Thesis:** The research thesis should have scientific and practical value, preferably addressing modern challenges in the networking field.

3. Periodic Evaluation and Review

There must be a mechanism for periodically evaluating the program to ensure its continued quality:

- * Surveys for Graduates and Employers: Gathering feedback on the program's effectiveness in preparing graduates for the job market.
- * Curriculum Review: A comprehensive review of the curriculum every two to three years to update it and add new topics.

Program Skills Outline

				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or Optional	Knowledge				Skills				Ethics				
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
2024/2025 1st Level	ACNE501	Advanced Computer Networks	Basic	*	*	*	*	*	*	*	*					
	NESY502	Networks Embedded Systems	Basic	*	*	*	*	*	*	*	*					
	ENGL503	English Language	Basic										*	*	*	*
	NTTH504	Networks Traffic Theory	Basic	*	*	*	*	*	*	*	*					
	WCAN505	Wireless Communications & Networks	Basic	*	*	*	*	*	*	*	*					
	SRME525	Scientific Research Methodology	Basic										*	*	*	*
	CLCO511	Cloud Computing	Optional	*	*	*	*	*	*	*	*					
	MALE519	Machine Learning	Optional	*	*	*	*	*	*	*	*					
	BDAN514	Big Data Analysis	Optional					*	*	*	*					
	AITH507	Advanced Information Theory	Optional					*	*	*	*					
	ANES518	Advanced Networks Security	Optional	*	*	*	*	*	*	*	*					
	WSIT521	Wireless Sensor Networks and Internet of Things	Optional	*	*	*	*	*	*	*	*					