Program Catalogue | 2025-2026 | دليل البرنامج الدراسي

Northern Technical University
الجامعة التقنية الشمالية

First Cycle – Bachelor's Degree (B.Sc.) –

Information and Computer Networks Engineering Technology

الدورة الاولى –بكالوريوس هندسة تقنيات – هندسة تقنيات المعلومات وشبكات الحاسوب

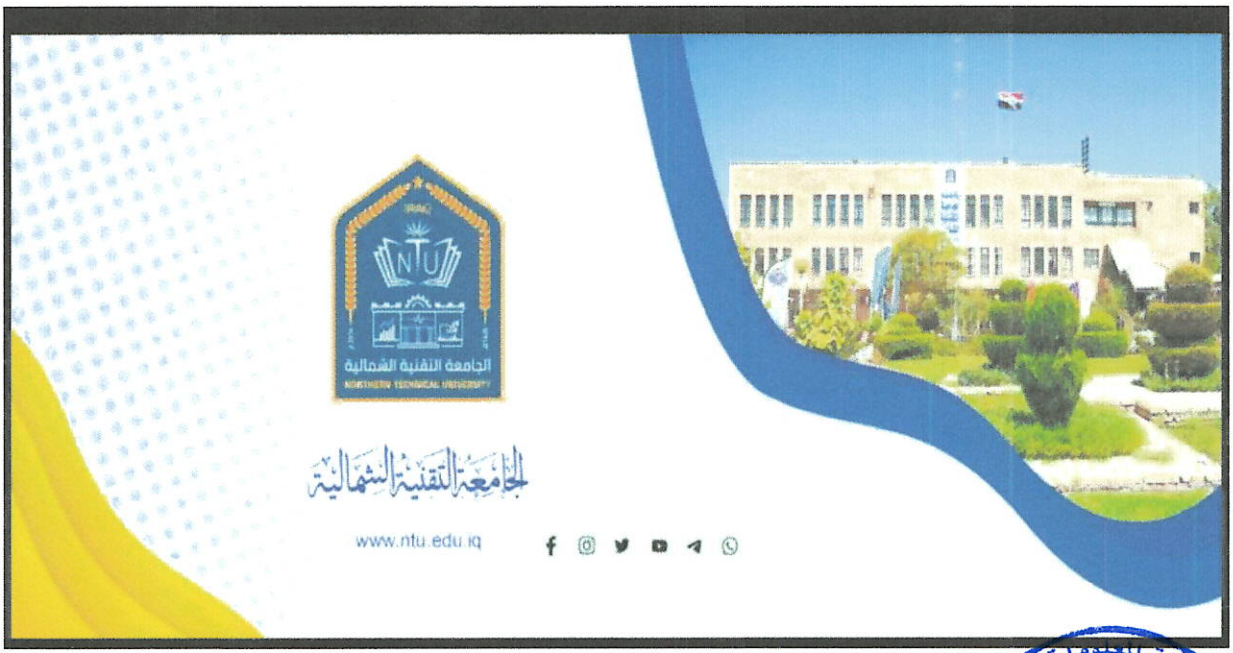


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1. Mission & Vision Statement

Vision Statement

The Information and Computer Networks Engineering Technology academic staff of the Technical engineering college at Northern Technical University believes that students come to understand the discipline of computer techniques through a combination of course work, laboratory experiences, and research. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by computer specialists to make observations, develop insights and create theories about the living organisms that populate our planet.

Mission Statement

The Information and Computer Networks Engineering techniques academic staff pursues a multifaceted charge at Northern Technical University. The Program seeks to provide all computer engineering students with fundamental knowledge of computer, as well as a deeper understanding of a selected focus area within the field. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work in hardware or software to pursue advanced degrees in modern technologies of networks and electronics of computers. In addition, computer engineering techniques courses provide a key laboratory science experience for those students seeking to complete the general education requirements

2. Program Specification

Programme code:	BSc-IT	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

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 provided. It is supported by a specification for each course that contributes to the program.

The program aims to graduate students with a specialization in computer technology engineering who will be qualified to work in the fields of computer. He will be graduated by a department after completing four academic years in which he is qualified to obtain a bachelor's degree in computer technology engineering.

3. Program (Objectives) Goals

1.Technical & Design Competencies

-Network Infrastructure: Design, build, and maintain high-performance local and wide-area networks (LAN/WAN).

-Addressing & Segmentation: Master IPv4/IPv6 addressing schemes, sub netting, and VLAN configurations.

-Network Automation: Implement Software-Defined Networking (SDN) and automate configurations using Python.

2. Cybersecurity & Infrastructure Defense

-Threat Mitigation: Configure stateful firewalls, access control lists (ACLs), and perimeter defense policies.

-Intrusion Prevention: Deploy IDS/IPS solutions and secure data transmission using IPsec and TLS VPNs.

-Vulnerability Assessment: Conduct regular vulnerability scans and audits following international security standards (e.g., NIST).

3. Cloud Computing & Virtualization

- Cloud Integration: Provision Virtual Private Clouds (VPCs) and build hybrid cloud network connections.

- System Virtualization: Manage virtualized network nodes, switches, and server infrastructure.

4. Professional Readiness & Industry Standards

- Industry Certifications: Prepare students for professional credentials (e.g., Cisco CCNA, CompTIA Network+/Security+).

- Advanced Troubleshooting: Develop diagnostic skills to identify and resolve complex network performance issues.

- Project Leadership: Foster teamwork, project management skills, and ethical responsibilities in engineering technology.

4. Student Learning Outcomes

Graduates of the Information Technology Techniques and Computer Networks Department will possess the knowledge, technical skills, analytical abilities, and professional competencies required to design, implement, manage, secure, and evaluate modern information technology and computer networking systems, while demonstrating effective communication, teamwork, ethical responsibility, research skills, and continuous learning.

Outcome 1

Network Devices Structure

Graduates will be able to illustrate the structure and function of IT and computer networks devices components and explain how they connected.

Outcome 2

Oral and Written Communication

Graduates will be able to formally communicate the results of computer programs using both oral and written communication skills.

Outcome 3

Scientific Knowledge

Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of science.

Outcome 4

Data Analyses

Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.

Outcome 5

Critical Thinking

Graduates will be able to use critical-thinking and problem-solving skills to develop a research project and/or paper.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Northern Technical University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The university has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1^{st} module score x ECTS) + (2^{nd} module score x ECTS) + ...] / 240

قسم تقنيات المعلومات وشبكات الحاسوب
Department of Information Technology and Computer Networks

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-101	Introduction to Computing & Problem Solving	123	77	8.00	C	
ICNE-102	Engineering Mathematics	63	37	4.00	B	
ICNE-103	Engineering Drawing	63	37	4.00	C	
ICNE-104	Digital Logic Design	63	37	4.00	C	
ICNE-105	DC Circuit Analysis	63	87	6.00	B	
NTU-100	Democracy and Human Rights	33	17	2.00	B	
NTU-101	English Language	33	17	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-106	Programming Language	123	77	8.00	C	
ICNE-107	AC Circuit Analysis	63	87	6.00	B	ICNE-105
ICNE-108	Introduction to Computer Network	63	137	8.00	C	
CAIK-100	Physics	33	17	2.00	B	
NTU-102	Computer 1	63	37	4.00	C	
NTU-103	Arabic Language	33	17	2.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-201	Computer Networks	63	87	6.00	C	ICNE-108
ICNE-202	Analytical Mathematics	63	87	6.00	C	ICNE-102
ICNE-203	Computer Architecture	63	87	6.00	C	
ICNE-204	Object-Oriented Programming	123	77	8.00	C	ICNE-106
NTU-200	Baath Regime Crimes in Iraq	33	17	2.00	B	
NTU-201	English Language	33	17	2.00	B	NTU-101

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Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-205	Data Communication and Networking	63	87	6.00	C	ICNE-201
ICNE-206	Electronic Engineering	63	37	4.00	C	
ICNE-207	Database Design and Management	63	87	6.00	C	
ICNE-208	Object-Oriented Software Development	123	77	8.00	C	ICNE-106 , ICNE-204
NTU-202	Computer 2	63	37	4.00	C	NTU-102
NTU-203	Arabic Language	33	17	2.00	B	NTU-103
CAIK-201	Summer Training1				-	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-301	Digital Signal Processing	63	87	6.00	C	
ICNE-302	Engineering Analysis	63	37	4.00	C	ICNE-102 , ICNE-202
ICNE-303	Web Systems Programming	123	27	6.00	C	
ICNE-304	Linux & Server Administration	63	37	4.00	C	ICNE-201
CAIK-301	Entrepreneurial Capacity Building	63	87	6.00	C	
ICNE-305	Elective	63	37	4.00	B	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-307	Wireless & IoT Networks	63	87	6.00	C	ICNE-201
ICNE-308	Data and Network Security	63	37	4.00	C	
ICNE-309	DevOps & Network Automation	63	87	6.00	C	ICNE-108 , ICNE-201
ICNE-310	Blockchain Fundamentals	123	27	6.00	C	
ICNE-311	Distributed Systems	63	37	4.00	B	
ICNE-312	Elective	63	37	4.00	E	
CAIK-302	Summer Training2				-	CAIK-301

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Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-401	IT Service Management (ITIL)	63	37	4.00	B	
ICNE-402	Research Methodology	63	87	6.00	C	
ICNE-403	Enterprise Network Design	123	27	6.00	C	ICNE-108 , ICNE-201 , ICNE-309
ICNE-404	Cloud Computing	63	37	4.00	C	
ICNE-405	Graduation Project 1	90	60	6.00	C	
ICNE-406	AI for Networks	63	37	4.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ICNE-407	Intelligent Networking Systems	123	27	6.00	C	ICNE-403
ICNE-408	Edge & 5G Networks	63	87	6.00	C	ICNE-201
ICNE-409	Software Engineering	63	37	4.00	C	
ICNE-410	Multimedia	63	37	4.00	C	
ICNE-411	Technical Elective	63	37	4.00	E	
ICNE-412	Graduation Project 2	90	60	6.00	C	

8. Contact

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