

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: Hawija Technical Institute

Department: Electronic Technique

Date of Form Completion: 26/3/2024

Dr. Omar K. Ahmed

Dean's Name

Date: 27 / 3 /2024

Signature



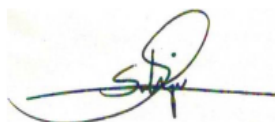
Dr. Suhail N. Shahab

Dean's Assistant for

Scientific Affairs

Date: 27 / 3 /2024

Signature



Husniyah J. ABdullah

Head of Department

Date: 26 / 3 /2024

Signature



Quality Assurance and University Performance Manager

Description of the academic program

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

1. Teaching institution	Hawija Technical Institute
2. Scientific department/center	Electronic technique
3. Name of the academic or professional program	Computer Technique Department
4. Name of the final certificate	diploma
5. Academic system: Annual/courses/others	Courses
6. Accredited accreditation program	ABET Engineering and Technology Accreditation Program
7. Other external influences	Keeping up with the labor market in updating curricula to suit the rapid technological development
8. Date the description was prepared	26/3/2024
9. Aims of the program	
<p>-The program aims to graduate students with a specialization in electronic and computer technology. Providing distinguished academic programs in the field of electronic and computer, both theoretical and practical, to comply with international standards of academic quality and meet the needs of the labor market.</p> <p>- Preparing a stimulating environment for faculty members to develop their knowledge and educational and research skills.</p>	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

1. Clarifying the basic concepts of electronic and control systems and their applications in social and industrial fields
2. Aims at knowing computer maintenance.
3. It aims to know the operation of computer systems.
4. It aims to know the analysis of digital signals.
5. It aims to know microprocessor circuits.
6. It aims to Learn about different measuring devices and sensors.

B - Subject-specific skills

1. Operating and maintaining computer parts and connecting their ancillary parts.
2. Gaining experience in computer industrial systems concerned with electronics and control.
3. Learn the skill of operating a computer and working in an organization.

Teaching and learning methods

Giving theoretical and practical lectures, running laboratories, workshops and summer training during the summer vacation period

Assessment methods

Quizzes

- Homework - quarterly and final exams for theoretical and practical subjects
- Small projects within the lesson
- Interaction within the lecture-reports

C. Thinking Skills

Response: Follow up the student's interaction with the material displayed on the screen.

- Attention: following up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to be presented.

Teaching and learning methods

The quarterly and final exams express commitment and cognitive and skill achievement

Assessment methods

- 1- Periodic test.
- 2- Homework.
- 3- Active participation in the classroom is evidence of student commitment and responsibility.
- 4- Student interaction within the lecture.

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

- 1- Communication and conversation skills such as English language.
- 2- Leadership skills and responsibility.
- 3- Self-education skills and self-reliance.
- 4- teamwork skills.

Teaching and learning methods

- 1- Explanation and clarification through lectures.
- 2- The method of displaying scientific materials on projectors: data show, smart boards, plasma screens.
- 3- Homework and mini-projects within the lectures
- 4- Graduation Projects.
- 5- Scientific visits.
- 6-Reports

Assessment Methods

Daily exams, quarterly exams, and final exams

11. Program structure

code		units	hours		Course Name	stage
			Pra.	Theo.		
NTU100	-	2	0	2	Human Rights and Democracy	First stage
NTU101	-	2	0	2	English Language	First stage
NTU102	-	2	1	1	Computer	First stage
NTU103		2	0	2	Arabic Language	First stage
NTU107	-	2	0	2	French	First stage
NTU105	-	2	1	1	Sport	First stage
TIMO100		2	0	2	Mathematics 1	First stage
TIMO101		3	3	0	Mechanical Workshop	First stage
TIMO102	TIMO100	2	0	2	Mathematics 2	First stage
ETC100		4	2	2	Principles of Electronics	First stage
ETC101		4	2	2	DC electrical circuits	First stage
ETC102		4	2	2	Principles of digital circuits	First stage
ETC103		2	2	0	Electronic workshop	First stage
ETC104		2	2	0	Engineering Drawing	First stage
ETC105		4	2	2	Electronics	First stage
ETC106		4	2	2	AC electrical circuits	First stage
ETC107		4	2	2	Digital circuits applications	First stage
ETC108		2	2	0	Electrical Drawing	First stage
ETC109		2	2	0	Electrical workshop	First stage
	-	2	0	2	Human Rights and Democracy	First stage
NTU100	-	2	0	2	English Language	First stage
		51	25	26		

code	units	hours		Course Name	
		pra.	Theo.		stage
NTU201	2	1	1	Computer	Second stage
NTU202	2	0	2	Arabic Language	Second stage
NTU203	2	0	2	Crimes of the Baath regime	Second stage
NTU200	0	0	2	English Language	Second stage
NTU204	2	0	2	Professional Ethics	Second stage
ETC200	4	2	2	Measurements Devices	Second stage
ETC201	4	2	2	Computer network 1	Second stage
ETC202	3	2	1	Computer operating system 1	Second stage
ETC203	4	2	2	Digital commutation 1	Second stage
ETC204	4	2	2	computer Architectures 1	Second stage
ETC205	2	2	0	Electronic instrumentation maintenance workshop(1)	Second stage
ETC207	4	2	2	Computer network 2	Second stage
ETC208	3	2	1	Computer operating system2	Second stage
ETC209	4	2	2	Digital communication 2	Second stage
ETC210	4	2	2	Computer Architectures 2	Second stage
ETC211	2	2	0	Electronic instrumentation maintenance workshop(2)	Second stage
ETC212	2	2	0	Project 2	Second stage
ETC213	4	2	2	Control	Second stage
ETC214	3	2	1	Programmable Logic Controller (PLC)	Second stage
ETC215	3	2	1	Renewable energy systems	Second stage
ETC216	3	2	1	Computer applications	Second stage
	65	35	30	Total units	

13. Personal Development Planning

- 1-Courses within the college.
- 2- Student group work to build and maintain laboratory equipment.
- 3- Asking students to report on recent scientific developments that are interested in the recent development in the field of specialization.
- 4- Participate in training courses.

14. Admission criteria.

- 1- 1- Central Admission to Morning Studies.
- 2- The branch from which the student graduated includes: the scientific branch and the vocational (industrial) branch.

15. Key sources of information about the program

1. Methodology books.
2. The Internet, self-education sites, reputable international universities sites, and Iraqi universities sites

مخطط مهارات المنهج

Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation

Learning outcomes required from the programme																				
general and qualifications skills				emotional and value goals				Skill goals				Cognitive goals				Mandatory/ optional	Course	Code	Stage	
4د	3د	2د	1د	4ج	3ج	2ج	1ج	4ب	3ب	2ب	ب1	4أ	أ3	2أ	أ1					
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Human Rights and Democracy	NTU100	first
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	English Language 1	NTU101	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Computer 1	NTU102	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Arabic Language	NTU103	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Optional	Sport	NTU105	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Optional	French Language	NTU107	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Mathematics 1	TIMO100	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Mechanical Workshop	TIMO101	

✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Mathematics 2	TIMO102	first
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Principles of Electronics	ETC100	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	DC current circuits	ETC101	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Principles of digital circuits	ETC102	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electronic workshop	ETC103	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Engineering Drawing	ETC104	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electronics	ETC105	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	AC current circuits	ETC106	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Digital circuits applications	ETC107	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electrical Drawing	ETC108	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electrical workshop	ETC109	

Course skills table

Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation

Learning outcomes required from the programme																Mandatory Optional	Course	code	stage
general and qualifications skills				emotional and value goals				Skill goals				Cognitive goals							
4د	3د	2د	1د	4ج	3ج	2ج	1ج	4ب	3ب	2ب	ب 1	4أ	أ 3	2أ	أ 1				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Computer	NTU201	Second
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Arabic Language	NTU202	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory		NTU203	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	English Language	NTU200	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Professional Ethics	NTU204	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Measurements Devices	ETC200	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Computer network 1	ETC201	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Computer operating system 1	ETC202	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Digital commutation 1	ETC203	

✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	computer Architectures 1	ETC204	Second
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electronic instrumentation maintenance (1)workshop	ETC205	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Computer network 2	ETC207	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		Computer operating system 2	ETC208	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Digital commutation 2	ETC209	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	computer Architectures 2	ETC210	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Electronic instrumentation maintenance workshop(2)	ETC211	
																Mandatory	Project 2	ETC212	
																Mandatory	Control	ETC213	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Mandatory	Programmable Logic Controller (PLC)	ETMI214	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Optional	Renewable energy systems	ETC215	

✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Optional	Computer applications	ETC216	
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TEMPLATE FOR COURSE SPECIFICATION

Course description

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

1. Educational institution	Hawija Technical Institute
2. Scientific department/center	Electronic technique
3. Course name/code	Principles of digital circuits
4. Available forms of attendance	weekly
5. Semester/year	Courses
6. Number of study hours (total)	4*15=60
7. The date this description was prepared	26/3/2024
8. Course objectives	Teaching student the foundations of logical digital circuits in electronic computers, building simple digital circuits using tables, and teaching the student about differential circuits, counter circuits, addition circuits, and registers.

9. Course outcomes and teaching, learning and evaluation methods

A. Cognitive goals

1. Identify the binary, octal, decimal, and hexadecimal number systems and convert between these systems.
2. Identify logic gates (types, operating principles, truth tables and logical symbols).
3. Learn how to connect and form logical circuits
4. Getting to know the rules of Boolean algebra and De Morgan's rules and how to simplify and deal with them. Uh, getting to know Karnaugh maps with two, three and four variables and ways to simplify logical equations.
5. Using Karnaugh maps
6. Applications of logic circuits (half sum, perfect sum, half and perfect subtractor, comparisons, Encoders and variational circuits
7. Identifying sequential circuits, types TD, (J-K), (S-R - Flip flop)
8. Identify the types of recorders and their design methods, how to enter and extract data from them, and how to shift records to the right and to the left.
9. Identify the types of meters, synchronous and asynchronous, and methods of designing them

B. The skills objectives of the course

1. Acquire the skill of designing and connecting comparison circuits and conversion circuits for decimal and binary systems
2. Constructing circles (additive, subtractive, semicircular and perfect) for numbers up to four levels
3. Constructing various types of differential circuits and generating square waves
4. Building ascending and descending positive counter circuits and digital analogue conversion circuits and vice versa.

Teaching and learning methods

Evaluation methods

- 1- Theoretical tests
- 2- Practical tests
- 3- Reports

C- emotional and value goals

- 1- The student participates in class activities and submits assignments on time.
- 2- Adherence to occupational safety rules while working in laboratories.
- 3- Attention control and attention test (selective attention)

10- Teaching and learning methods

1. Listen and pay attention to the professor's explanation.
2. Knowing the role of science and scientists in life.
3. The student's interest in the calm and cleanliness of the classroom.

Assessment Methods

- 1- practical test
- 2- Discussion sessions

11. Course structure					
Evaluation method	Teaching method	Name of the unit/topic	Required learning outcomes	Hours	the week
Daily evaluation	Explanation and clarification	Number and encryption system	Number and coding	4	1
Daily evaluation	Explanation and clarification	Logic gates	Introduction to computer parts and cryptography	4	2
Daily evaluation	the explanation	Boolean algebra	Boolean algebra	12	5-3
Daily evaluation	the explanation	Applications of logical functions	Logical function	12	8-6
Daily evaluation	the explanation	Value comparator	comparator	12	11 -9
Daily evaluation	the explanation	Karnaugh maps	Karnaugh maps	8	13 -12
Daily evaluation	the explanation	Karnaugh maps	Two- and three-variable Karnaugh maps	8	15 -14

12. Infrastructure

1. Required prescribed books	A methodological book on digital circuits or any new lectures prepared by the teacher on the .subject
REFERENCE	Modern books, software, and .websites related to the subject
Electronic references, Internet	Websites of universities, institutes, specialized research centers, engineering and technical websites

13- Course development plan

Searching for the latest scientific developments in this subject, as well as finding sufficient sources on developments in computer systems in order to add them to the established curriculum to ensure its development.