Ministry of Higher Education & Scientific Research

Supervision and Scientific Evaluation Directorate

Quality Assurance and Academic Accreditation

International Accreditation Dept.

Guide to Course Descriptions and Academic Programs for 2025

Ministry of Higher Education & Scientific Research

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Academic Program Specification Form for The Academic Year 2024

University: Northern Technical University

Faculty/Institute: Al-dour Technical Institute

Department: Electronic Techniques

Name of the academic or professional program: Technical Diploma in Electronic Techniques

Name of the final certificate: Technical Diploma in Electronic Techniques

Academic system: Curriculum

File preparation date: **22-1-2025**

File filling date:22-1-2025

Signature

The name of the head of the department

Assist. Lec. Nida Muhsin Ali

Signature

Dean's Assistant For Scientific Affairs

Assist. Prof. Dr. Hanan Shahb Ahmad

Check the file by

Quality Assurance and University Performance Division

Name of the director of the Quality Assurance and University Performance Division:

Signature

Asst. Lecturer Hayder Ali Mohssn

Dean's endorsement

Assist. Prof. Dr. Maha Elttayef Jasim

Vision of program

Providing knowledge of electronic technologies and acquiring technical skills in the operation and maintenance of electronic devices and creating innovative technical solutions to promote sustainable development and meet the needs of the changing work environment.

Program message

The number of intermediate technical cadres possess specialized knowledge and technical skills in the field of electronics to meet the needs of the workforce, focusing on the development of technical competencies with the quality of applied education, practical training and innovation to serve the local and regional community.

Program Goals

1. Application of quality standards in education and training to ensure the research of excellent educational outcomes.

2. Developing curricula and study programs in line with scientific and technological developments in the field of electronic technologies.

3. Supporting and encouraging scientific research that contributes to finding innovative technical solutions to industrial and social problems.

4. Building sustainable cooperative relations with the industrial sector and local institutions to provide training and employment opportunities and support the professional development of graduates.

5. Encouraging students to implement innovative technical projects to contribute to improving the quality of life and developing local industries.

6. Providing technical and technical advice to various institutions and contributing to the promotion of technical awareness in society.

Program accreditation

The department is seeking programmatic accreditation.

External influences

Government and private sector

6. Program structure for the first and second levels				
Program structure	**Number of Curriculum**	**Units**	**Percentage**	**Notes***
University Requirements	**10**	**20**	**%19**	**9 basic, 1 optional**
Institute Requirements	**3**	**6**	**%5.7**	**3 basic**
Department Requirements	**24**	**79**	**%75.2**	**78 basic, 1 optional**
Summer Training	**Completed**	–––––	–––––	**9 basic, 1 optional**
Other	**None**			**3 basic**

*** Notes may include whether the course is basic or optional.**

7-Program Description Department of Electronic Technologies First Level Curriculum				
Year / Level	Code of the Curriculum	Name of the Curriculum	Approved hours	
			Theoretical	Practical
First Level	EOTO100	Principles of Electronics	2	2
	EOTO101	DC Circuits	2	2
	EOTO102	Principles of Digital Circuits	2	2
	EOTO103	Electronic Workshop	-	2
	EOTO104	Engineering Drawing	-	2
	EOTO105	Electronics	2	2
	EOTO106	AC Circuits	2	2
	EOTO107	Applications of Digital Circuits	2	2
	EOTO108	Electrical Drawing	-	2
	EOTO109	Electrical Workshop	-	2
	TIDO100	Mathematical Foundations	2	-
	TIDO101	Differential and Integral Calculus	2	-
	TIDO102	Mechanics Labs	-	2
	NTU100	Democracy and Human Rights	2	-
	NTU101	English Language	2	-
	NTU 102	Computer	1	1
	NTU 103	Arabic Language	2	-
	NTU104	Sports	1	1

7-Program Description Department of Electronic Technologies Second Level Curriculum				
Year / Level	Code of the Curriculum	Name of the Curriculum	Code of the Curriculum	
			Theoretical	Practical
Second Level	EOTO210	Electronic circuits (1)	2	2
	EOTO211	Microcomputers (1)	2	2
	EOTO212	Measuring devices (1)	2	2
	EOTO213	Communications (1)	2	2
	EOTO214	Electronic devices maintenance workshop (1)	-	2
	EOTO216	Electronic circuits (2)	2	2
	EOTO217	Microcomputers (2)	2	2
	EOTO218	Measuring devices (2)	2	2
	EOTO219	Communications (2)	2	2
	EOTO220	Electronic devices maintenance workshop (2)	-	2
	EOTO221	The project	-	2
	EOTO222	Control systems	1	2
	EOTO223	Programmable logic controller circuits	1	2
	EOTO224	Renewable energy systems	1	2
	EOTO225	English language	2	-
	NTU 201	Computer	1	1
	NTU 202	Arabic language	2	-
	NTU 203	Crimes of the Baath regime in Iraq	2	-
	NTU204	Professional ethics	2	-

7. Expected learning outcomes of the program

Knowledge

1-Technical knowledge: Understanding the basic principles of electronic circuits, devices, and electronic systems.

2- Practical skills: Ability to design, test, and maintain electronic systems.

3- Ability to analyze and design: Analyze and solve electronic problems using modern tools and techniques.

4- Ability to work in teams and communicate: Work in teams and provide technical reports and presentations.

5- Sustainability and professional development: Keeping pace with technological developments and adhering to professional ethics.

6- Use of information technology: Programming and analysis using computing tools.

Skills

1 - Teamwork skills.

2- Ability to interact with information technology.

3- Leadership skills and responsibility.

4- Qualifies the student to pass the appointment interviews.

Values

1- The student acquires the concepts and basics of electronic technologies.

2- Analyze the problems facing its workers and how to develop the necessary solutions.

3- Evaluate the proposed solutions and choose the best ones.

4- Adopt a culture of self-learning to keep pace with technological developments.

8. Teaching and learning strategies

1. Explaining the scientific curriculum in detail using different means of clarification.

2. Study sessions focusing on the latest scientific developments related to the curriculum.

3. Field visits to industrial establishments to view various real projects and industrial allenges.

4. Conducting experiments and applied projects to apply theoretical concepts.

5. Working in groups to enhance cooperation and exchange of experiences.

6. Providing periodic assessments to measure students' progress and motivate them to continuous learning.

9. Evaluation methods

1. Exams (weekly, monthly, daily and end-of-year exam) in both theoretical and practical parts

2. Submitting monthly reports on various academic courses

3. Summer training.

10. Teaching staff

Faculty members

Academic Degree	Specialization		Special requirements/skills		Faculty members	
	General	Private			Staff	External lecturer
Assistant Professor	Engineering	Computers			1	
Assistant Lecturer	Information Technology	Information Systems			1	
Assistant Lecturer	Engineering	Mechanics			1	
Assistant Lecturer	Engineering	Civil			1	
Bachelor's	Engineering	Electricity			3	
	Languages	Persian			1	
	Computer Science	Computers			1	
Technical Diploma	Electronic Technologies				6	
	Accounting Technologies				1	
Master's	Electronic Technologies					1
Bachelor's	Engineering					1

Professional development

Orienting new faculty members

Participation in courses focusing on the integrity of the Arabic language, the nature of administrative work, and specialized courses in the field of laboratory work and research, in addition to courses on teaching methods and suitability.

Professional development for faculty members

1. Participation in local and international conferences

2. Participation in applied courses and workshops within the department's specializations

Acceptance standard

Students who graduated from middle school are accepted through the central admission system based on:

1- Branch (scientific and vocational)

2- Average score

12 .The most important sources of information about the program

1. The website of the university and institute
2. University guide
3. Central Library
4. References and sources for the institute and the department
5. The World Wide Web

13. Program Development Plan

1. Adding information on all topics related to electronic technologies.
2. Identifying modern scientific developments.
3. Participating in international and local conferences.
4. Participating in scientific workshops inside and outside Iraq.
5. Hosting scientific competencies in the field of specialization

Academic Program Description

This academic programme description provides a concise summary of the main features of the programme and the learning outcomes expected of the student, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each Curriculum within the program.

A- Cognitive objectives	
A-1	The ability to apply knowledge in electronic fields.
A-2	Understand the professional and ethical responsibilities of the field of specialization.
A-3	The ability to evaluate the outcomes of the course with faculty, industrial and professional practitioners, as well as employers and graduate students to improve them.
A-4	Teach leadership skills, values of commitment, ethical behavior and respect for others.
B- Program specific skill objectives	
B-1	The ability to work and integrate into multidisciplinary teams.
B-2	The ability to design and conduct discussion sessions as well as analyze and interpret data.
B-3	The ability to use modern technologies, specialized skills and tools and the ability to identify and formulate electronic problems in the field of specialization.
C- Affective and value objectives	
C-1	The ability to communicate effectively with those concerned with the field of specialization.
C-2	Recognize the need and ability to engage in lifelong learning and broad learning necessary to understand the impact of solutions on the global level, electronic problems and the social environment.
C-3	Knowledge of contemporary issues in the field of specialization.
D- General and transferable skills (other skills related to employability and personal development)	
D-1	The student should be able to use the computer in design and use modern programs
D-2	The student should learn some laws and theories of mathematics that qualify him to apply the laws within the specialization
D-3	The student should learn the basics of occupational safety principles that contribute to preserving the self, devices, equipment and various
D-4	Teaching the student the basic international standards for human rights and successful democracy in developed countries
D-5	Teaching the student the basics of writing reports and using technical English through terminology within the specialization

Curriculum Skills Map																				
please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed																				
				Programmed Learning Outcomes																
Year /Level	Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific 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	D5
First Level	EOTO100	Principles of Electronics	C	X				X	X			X				X	X			
	EOTO101	DC Electrical circuits	C	X	X			X	X			X	X			X	X			
	EOTO102	Principles of digital circuits	C	X				X	X			X	X			X	X			
	EOTO103	Electronic workshop	C	X				X	X			X				X	X			
	EOTO104	Engineering Drawing	C	X				X	X			X				X	X			
	EOTO105	Electronics	C	X				X	X			X				X	X			
	EOTO106	AC electrical circuits	C	X				X	X			X	X			X	X			
	EOTO107	Digital circuits applications	C	X				X	X			X	X			X	X			
	EOTO108	Electrical Drawing	C	X				X	X			X				X	X			
	EOTO109	Electrical workshop	C	X				X	X			X	X			X	X			
	TIDO100	Mathematics Foundation	C	X	X			X	X			X				X	X			
	TIDO101	Differentiation and Integration	C	X	X			X	X			X				X	X			

	TIDO102	**Mechanical Workshop**	C	**X**	**X**			**X**	**X**			**X**				**X**	**X**			
	NTU100	**Human Rights and Democracy**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU101	**English Language**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 102	**Computer**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 103	**Arabic Language**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU104	**Sport**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO210	**Electronic1 Circuit**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO211	**Microcomputer1**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO212	**Devices 1 Measurements**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO213	**Communication1**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO214	**Electronic**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO216	**Control systems**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO217	**Project1**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO218	**Electronic2 Circuit**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO219	**Microcomputers2**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO220	**Devices 2 Measurements**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO221	**Communication2**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO222	**Electronic**	C	**X**				**X**	**X**			**X**				**X**	**X**			
second	**EOTO223**	**Project2**	C	**X**				**X**	**X**			**X**				**X**	**X**			
Level	**EOTO224**	**logic Programmable (PLC) controller**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	EOTO225	**energy systems Renewable**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 201	**Electronic2 Circuit**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 202	**Microcomputer1**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 203	**Devices 1 Measurements**	C	**X**				**X**	**X**			**X**				**X**	**X**			

	NTU204	**Communication1**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 200	**English language**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 201	**Computer**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 202	**Arabic Language**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU 203	**Crimes of Al-Baath regime in iraq**	C	**X**				**X**	**X**			**X**				**X**	**X**			
	NTU204	**Professional Ethics**	C	**X**				**X**	**X**			**X**				**X**	**X**			

Curriculum guide

for the year (2024-2025) according to the curriculum system

Northern Technical University Technical Institute / Door Department of Electronic Technology / First Level

code	number of units	Number of practical hours	Number of theoretical hours	curriculum Name In English	Requirement type
NTU 100	2	-	2	Democracy and Human Rights	University requirements (10)units compulsory units8 + 2 optional modules
NTU 101	2	-	2	English Language	
NTU 102	2	1	1	Computer	
NTU 103	2	-	2	Arabic Language	
NTU 104	2	1	1	Sport	
NTU 105	2	-	2	French language	
TIDO100	2	-	2	Mathematics Foundation	Institute requirements 6 compulsory units
TIDO101	2	-	2	Differentiation and Integration	
TIDO102	2	-	2	Mechanical Workshop	
EOTO100	4	2	2	Principles of Electronics	Specialized requirements units32 compulsory units32 + 0 optional module
EOTO101	4	2	2	DC Electrical circuits	
EOTO102	4	2	2	Principles of digital circuits	
EOTO103	2	2	-	Electronic workshop	
EOTO104	2	2	-	Engineering Drawing	
EOTO105	4	2	2	Electronics	
EOTO106	4	2	2	AC electrical circuits	
EOTO107	4	2	2	Digital circuits applications	
EOTO108	2	2	-	Electrical Drawing	
EOTO109	2	2	-	Electrical workshop	
the total	50	23	27		

Curriculum guide

SCECOND LEVEL

code	number of units	Number of practical hours	Number of theoretical hours	curriculum Name In English	Requirement type
NTU200	2	-	2	English Language	University requirements (10)units compulsory units
NTU201	2	1	1	Computer	
NTU202	2		2	Arabic Language	
NTU203	2		2	The crimes of the Baath regime in Iraq	
NTU204	2	-	2	Professional Ethics	
EOTO210	4	2	2	Electronic Circuit 1	Specialized requirements 47 units 44 compulsory units + 3 optional module
EOTO211	4	2	2	Microcomputer 1	
EOTO212	4	2	2	Measurements Devices 1	
EOTO213	4	2	2	Communication 1	
EOTO214	2	2	-	Electronic instrumentation maintenance workshop 1	
EOTO216	4	2	2	Electronic Circuit 2	
EOTO217	4	2	2	Microcomputers 2	
EOTO218	4	2	2	Measurements Devices 2	
EOTO219	4	2	2	Communication 2	
EOTO220	2	2	-	Electronic instrumentation maintenance workshop 2	
EOTO221	2	2	-	Project	
EOTO222	3	2	1	Control systems	
EOTO223	3	2	1	Programmable logic controller (PLC)	
EOTO224	3	2	1	Renewable energy systems	
EOTO225	3	2	1	Computer applications	
the total	60	31	29		

Curriculum description form

Consolidating the principles of human rights among students in order to achieve a correct understanding of these rights based on Islamic concepts, comparing them to international conventions, and spreading the culture of human rights in society. Enabling students to explain the concept of democracy, distinguish this concept from other concepts, and understand the meaning of responsibility and respect for the rights and freedoms of others.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Democracy and Human Rights (NTU 100)
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	-The student learns about the principles and values of human rights, introduces them, and educates generations to respect and adhere to them. -Learn about public freedoms, what these freedoms are in their details, and the .relationship between them and democracy
9	curriculum outcomes and teaching, learning and evaluation methods	
	A-Cognitive objectives	
A-1	- Consolidating the principles of human rights among students in order to achieve a correct understanding of these rights based on Islamic concepts, comparing them to international conventions, and spreading the culture of human rights in society.	
A-2	- Enabling students to explain the concept of democracy, distinguish this concept from other concepts, and understand the meaning of responsibility and respect for the rights and freedoms of others.	
	B - The program's marathi goals	
B-1	Knows human rights and democratic systems.	
B-2	To learn about civil society organizations.	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	.Improve their discussion skills	
C-2		

Teaching methods ((Theoretical lectures / discussion and dialogue / practical lectures / field visits / seminars / laboratories / office activities / example solutions / graduation project / summer training))	
Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	.He knows his rights and duties and how to deal with others in a democratic manner
D-2	Raise their research perceptions and move the student from education to learning

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1 2	**2**	The roots of human rights	The roots of human rights and their development in human history. Human rights in ancient and medieval times	**Theoretical lectures**	Daily tests
3 4	**2**	Agreements and charters	The first requirement: human rights in ancient civilizations, with a focus on the Mesopotamian civilization. The second requirement: Human rights in divine laws, with a focus on human rights in Islam.	Theoretical lectures	Daily tests
5 6	**2**	Charters and constitutions	Third requirement: Human rights in the Middle Ages:	Theoretical lectures	Daily tests
7 8	**2**	Public freedoms and equality	a. Human rights in doctrines, schools and political theories.	Theoretical lectures	Daily tests
9 10	**2**	Classificatio n of freedoms	B. Human rights in corporations, rights and their declarations, revolutions and constitutions (English documents, American Revolution, French Revolution, Russian Revolution)	Theoretical lectures	Daily tests

11 12	**2**	Intellectual freedoms	Human rights in modern and contemporary history.	Theoretical lectures	Daily tests
13 14	**2**	Freedom of the press	The first demand: international recognition of human rights since World War I (League of Nations, United Nations)	Theoretical lectures	Daily tests
15	**2**	Freedom of association	The second demand: regional recognition of human rights:	Theoretical lectures	Daily tests

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Consolidating the principles of human rights among students in order to achieve a correct understanding of these rights based on Islamic concepts, comparing them to international conventions, and spreading the culture of human rights in society. Enabling students to explain the concept of democracy, distinguish this concept from other concepts, and understand the meaning of responsibility and respect for the rights and freedoms of others.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	English Language (NTU 101)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\Second Level
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Getting to know the basics of the English language, as well as speaking and getting to know the terminology that enables the student to understand and know the language.
9	curriculum outcomes and teaching, learning and evaluation methods	
	A-Cognitive objectives	
1 -A	Strengthening students' learning to use the English language in order to help them enrich their knowledge of terms and expressions and strengthen their skills.	
A-2	The student can speak English in daily life	
	B - The program's marathi goals	
B-1	Teaching the student how to use English grammar in conversation.	
B-2	Translation and writing of letters in English.	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Improve their discussion skills.	
C-2	Brainstorming	
	Teaching methods .((Theoretical lectures/discussions))	

Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improving the student's ability to speak English in the field of specialization and in a way that is compatible with the labor market
D-2	

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	theoretical	Unit one :hello Am/are/is, my/your This is with practice in work	Knowledge	Tests and reports
2	2	theoretical	Unit two :your world He/she /they, his/her Questions	Knowledge	Tests and reports
3	2	theoretical	Unit three: all about	Knowledge	Tests and reports
4	2	theoretical	Unit four:family and friends Possessive adjectives Possessive's Has/have Adjective+ noun	Knowledge	Tests and reports
5	2	theoretical	Unit Five :the way I live Present simple l/you /we /they A and an Adjective + noun	Knowledge	Tests and reports
6	2	theoretical	Unit six : every day Present simple he/she Questions and negatives Adverbs of frequency	Knowledge	Tests and reports
7	2	theoretical	Unit seven :my favorites Question words Pronouns This and that	Knowledge	Tests and reports
8	2	theoretical	Unit eight :where I live Prepositions.There is /are	Knowledge	Tests and reports
9	2	theoretical	Unit nine :times past Was /were born Past simple - irregular verbs	Knowledge	Tests and reports

10	2	theoretical	Unit ten: we had a great time! Past simple -regular & irregular Question Negatives Ago	Knowledge	Tests and reports
11	2	theoretical	Unit eleven :Can /can't Adverbs Requests I can do that	Knowledge	Tests and reports
12	2	theoretical	Unit twelve: please I'd like... Some and any Like and would like and thank you	Knowledge	Tests and reports
13	2	theoretical	Unit thirteen: here and now Present continuous Present simple & present continuous	Knowledge	Tests and reports
14	2	theoretical	Unit fourteen: it's time to go! Future plans Revision writing email and informant letter	Knowledge	Tests and reports
15	2	theoretical	Unit fifteen : revision	Knowledge	Tests and reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Ccurriculum description form

Teaching the student the skills of working on a calculator and using its ready-made applications and Internet principles in the field of specialization.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Computer (NTU 102)
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	-Utilize the computer for fundamental tasks. -Identify and discuss the hardware components of the computer system. -Creating documents using a word processor and creating presentations. -Conducting research on the Internet.
9	curriculum outcomes and teaching, learning and evaluation methods	
	A-Cognitive objectives	
A-1	Know how the calculator works	
A-2	Get to know the taskbar	
A-3	Learn about creating and deleting files	
A-4	Learn about Office requirements	
	B - The program's marathi goals	
B-1	Identify the parts of a calculator	
B-2	Knowledge of SOFTWARE and HARDWARE	
	Teaching and learning methods .((Theoretical lectures/practical lectures and presentation on Date show))	
	Evaluation methods .((Oral exams/written exams/observation/student's cumulative record))	
	C - emotional and value goals	
C-1	Brainstorming...	
C-2	Intellectual questions...	
	Teaching methods .((Theoretical lectures/practical lectures and presentation on Date show))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	

D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	.Works on calculator units

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	Practical + theoretical	Introduction to Computer: Concepts of Hardware and Software with their components; Concept of Computing, Data and Information; Applications of Information Electronics and Communication Technology (IECT); Connecting input/output devices, and peripherals to CPU.	Knowledge and practical application	Tests and reports
2 And 3	2	Practical + theoretical	Computer Componenta: Computer Portions, Hardware Parts, I/O Units, Memory Types, Basic CPU components, Computer Ports, Personal Computer, Personal Computer (Features and Types)	Knowledge and practical application	Tests and reports
4 And 5	2	Practical + theoretical	Operating System and Graphical User Interface GUI: Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques; Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creatin Short cuts.	Knowledge and practical application	Tests and reports
6 And 7	2	Practical + theoretical	Word Processing: Word Processing Basics , Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.	Knowledge and practical application	Tests and reports
8 And 9	2	Practical + theoretical	Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet	Knowledge and practical application	Tests and reports
10 And 11	2	Practical + theoretical	Presentation Software: Basics of Presentation software; Creating Presentation; Preparation and Presentation of Slides- Slide Show; Taking printouts of presentation / handouts.	Knowledge and practical application	Tests and reports

11 And 12	2	Practical + theoretical	Introduction to Internet and Web Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet; World Wide Web; Web Browsing software's, Search Engines; Understanding URL; domain name; IP Address.	Knowledge and practical application	Tests and reports
13 And 14	2	Practical + theoretical	Communications and Emails: Basics of electronic mail; Getting an email account; Sending and receiving emails;Accessing sent emails; Using Emails; Document collaboration	Knowledge and practical application	Tests and reports
15	2	Practical + theoretical	Computer Troubleshooting : Identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving issues.	Knowledge and practical application	Tests and reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula - Follow up on scientific developments in the field of specialization	

Curriculum description form

Teaching the student how to preserve the classical language, staying away from colloquial language, and helping the student write without spelling errors by adjusting the rules of the Arabic language.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Arabic Language (NTU 103)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student to use the Arabic language in administrative and accounting correspondence and developing his skills in this field
9	curriculum outcomes and teaching, learning and evaluation methods	
	A-Cognitive objectives	
A-1	Teaching the student how to preserve the classical language and stay away from colloquial language	
	B - The program's marathi goals	
B-1	Teaching the student to write without spelling errors by adjusting the rules of the Arabic language	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	.Intellectual questions in the field of the Arabic language.	
	Teaching methods .((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improving their discussion skills	
D-2	Improving his ability to communicate in Arabic and avoiding mistakes	

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	Practical	An introduction to linguistic errors - the tied and long ta'a and the open ta'a	Knowledge	Tests and reports
2	2	Practical	Rules for writing the extended and reduced alif - the solar and lunar letters	Knowledge	Tests and reports
3	2	Practical	The opposite and the light	Knowledge	Tests and reports
4	2	Practical	Humza writing	Knowledge	Tests and reports
5	2	Practical	punctuation marks	Knowledge	Tests and reports
6	2	Practical	Noun and verb and differentiate between them	Knowledge	Tests and reports
7	2	Practical	reactants	Knowledge	Tests and reports
8	2	Practical	The number	Knowledge	Tests and reports
9, 10	2	Practical	Common language errors applications	Knowledge	Tests and reports
11	2	Practical	Noon and Tanween - meanings of prepositions	Knowledge	Tests and reports
12	2	Practical	Formal aspects of administrative discurriculum	Knowledge	Tests and reports
13, 14	2	Practical	Administrative discurriculum language	Knowledge	Tests and reports
15	2	Practical	Forms of administrative correspondence	Knowledge	Tests and reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

The student should be able to recognize the most important types of sports and what are the laws and skills specific to some sports.

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Sport (NTU 104)
4	Available attendance forms	Optional
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student should be able to recognize the most important types of sports and what are the laws and skills specific to some sports.
9	curriculum outcomes and teaching, learning and evaluation methods	
A-Cognitive objectives		
A-1	Learn about the most important sports legislation and laws and how to manage sports tournaments and competitions	
B - The program's marathi goals		
B-1	Identify the motor mechanism of the human body and what are the common injuries that occur in the human body	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carrying out his duties at the work site for professional motives.	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work	

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	Practical + theoretical	Sports definition, importance and types	Knowledge and practical application	Tests and reports
2	2	Practical + theoretical	Human body movement mechanism	Knowledge and practical application	Tests and reports
3	2	Practical + theoretical	Common sports injuries	Knowledge and practical application	Tests and reports
4	2	Practical + theoretical	Basic skills of the game of basketball	Knowledge and practical application	Tests and reports
5	2	Practical + theoretical	International law of the game of basketball	Knowledge and practical application	Tests and reports
6	2	Practical + theoretical	Basic skills of table tennis and its international law	Knowledge and practical application	Tests and reports
7	2	Practical + theoretical	Basic skills of volleyball and its international law	Knowledge and practical application	Tests and reports
8	2	Practical + theoretical	swimming sport	Knowledge and practical application	Tests and reports
9	2	Practical + theoretical	Basic skills of tennis and its international law	Knowledge and practical application	Tests and reports
10	2	Practical + theoretical	Basic handball skills	Knowledge and practical application	Tests and reports
11	2	Practical + theoretical	International law of handball	Knowledge and practical application	Tests and reports
12	2	Practical + theoretical	Arena and field games (types, international law of (the game	Knowledge and practical application	Tests and reports
13	2	Practical + theoretical	Basic soccer skills	Knowledge and practical application	Tests and reports

14	2	Practical + theoretical	Management of competitions and sports competitions	Knowledge and practical application	Tests and reports
15	2	Practical + theoretical	Sports laws and legislation	Knowledge and practical application	Tests and reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Introducing the student to the use of mathematics in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a solution to the problem.

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Mathematics Foundation (TIDO100)
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student to use mathematics in scientific subjects and developing his skills in his field of specialization
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Introducing the student to the use of mathematics in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a solution to the problem	
B - The program's marathi goals		
B-1	.The student can process and analyze mathematical data and reach conclusions .Learn about mathematical methods	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carrying out his duties at the work site for professional motives.	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improving his physical fitness and increasing his ability to bear the muscular	

	and motor demands of work

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1+2	2	Acknowledgment and Practical application	Matrices - Determinants - Electrical applications.	theoretical	Quizes+Reports
3	2	Acknowledgment and Practical application	Trigonometric identities and trigonometric equations.	theoretical	Quizes+Reports
4+7	2	Acknowledgment and Practical application	Complex numbers - the geometric representation of a complex number - the relationship of electrical units to the complex number - Find the roots of the complex number.	theoretical	Quizes+Reports
8	2	Acknowledgment and Practical application	Foundations and logarithms and their laws	theoretical	Quizes+Reports
9+10	2	Acknowledgment and Practical application	Differentiation - Algebra of Derivatives - Polynomial Functions and Their Derivatives - Chain Base - Complex Function - Parametric Function.	theoretical	Quizes+Reports
11+12	2	Acknowledgment and Practical application	Applications of differentiation - maximum and minimum values - distance, velocity, and acceleration. General physical and engineering applications.	theoretical	Quizes+Reports
13+14	2	Acknowledgment and Practical application	Finding the length of a curved arc - different applications.	theoretical	Quizes+Reports

15	2	Acknowledgment and Practical application	Tangent and column equation - velocity and acceleration - calculations of voltage and current change in terms of time.	theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Ccurriculum description form

Introducing the student to the use of mathematics in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a solution to the problem

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Differentiation and Integration (TIDO101)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student to use Differentiation and Integration subjects and developing his skills in his field of specialization
9	curriculum outcomes and teaching, learning and evaluation methods	

A - Cognitive objectives	
A-1	Introducing the student to the use of mathematics in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a solution to the problem
B - The program's marathi goals	
B-1	.The student can process and analyze mathematical data and reach conclusions .Learn about mathematical methods
Teaching and learning methods ((Theoretical lectures/practical lectures))	
Evaluation methods .((Oral exams / written exams / semester and final exams))	
C - emotional and value goals	
C-1	Carrying out his duties at the work site for professional motives.
Teaching methods ((Theoretical lectures/practical lectures))	
Evaluation methods .((Oral exams / written exams / semester and final exams))	
D- General and qualifying transferred skills (other skills related to employability and personal development)	

D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work

10. Curriculum structure

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1+2	2	Acknowledgment and Practical application	Drawing Functions - Drawing the Trigonometric Function and Inverse, Exponential and Logarithmic Functions and Their Relationship with Each Other - Maximum and Minor Limits and Inflection Points - Alignments	theoretical	Quizes+Reports
3+4	2	Acknowledgment and Practical application	Ends - the goal of algebraic and trigonometric functions - applications to ends	theoretical	Quizes+Reports
5+6	2	Acknowledgment and Practical application	Integration - laws and its relationship to differentiation - definite and indefinite complementarity	theoretical	Quizes+Reports
7+8	2	Acknowledgment and Practical application	Applications of integration - the area under the two curves and between two curves - the approximate area using the trapezoidal rule and Simpson - rotational volumes with interest in drawing according to the coordinate system.	theoretical	Quizes+Reports
9+11	2	Acknowledgment	General methods	theoretical	Quizes+Reports

		and Practical application	of integration include substitution, segmentation, and use of partial, exponential and logarithmic fractions.		
12+15	2	Acknowledgment and Practical application	Solving differential equations	theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

The student will be able to explain the principles of public safety and the conditions for their availability in the workshop and learn the basics of the welding, plumbing, blacksmithing and lathe workshop to develop his skills in his field of specialization

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Mechanical Workshop (TIDO102)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student the principles and basics of mechanical workshops to develop his skills in his field of specialization
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	The student will be able to explain the principles of public safety and the conditions for their availability in the workshop and learn the basics of the welding, plumbing, blacksmithing and lathe workshop to develop his skills in his field of specialization	
B - The program's marathi goals		
B-1	Principles and basics of mechanical workshops, training in welding, plumbing, blacksmithing, and lathe, and an explanation of the basics of public safety and the conditions that must be met in laboratories	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carrying out his duties at the work site for professional motives.	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		

D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work

10. Curriculum structure

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Knowledge and Experimental application	-Welding (6 weeks) Occupational safety and security precautions: gas welding, the equipment used and how to install and adjust it, other auxiliary tools and gases used and their specifications, welding wires, their types and measurements, other auxiliary materials, welding equipment, types of flames and the method of igniting and adjusting the required flame, artifacts, rinsing and cleaning the edges to be welded.	Theoretical lecture	Tests and reports
2	2	Knowledge and Experimental application	Practical exercises: Welding opposite surfaces, perpendicular surfaces, inclined surfaces, circle welding, longitudinal and transverse cutting	Theoretical lecture	Tests and reports
3	2	Knowledge and Experimental application	Welding equipment, practical training on using the electric arc to weld various surfaces, equipment used, electrodes and how to install them, practical training.	Power point, Lecture	Tests and reports
4	2	Knowledge and Experimental application	Gas welding and gas co2 cutting processes, equipment used and precautions to be taken Doing exercises on welding items using gas co2	Power point, Lecture	Tests and reports
5	2	Knowledge and Experimental application	Training in gas-shielded arc welding (Tig, Mig).	Power point, Lecture	Tests and reports
6	2	Knowledge and Experimental application	Assembly exercises using various cutting and welding processes.	Power point, Lecture	Tests and reports
7	2	Knowledge and Experimental application	-Plumbing and blacksmithing (3 weeks) Equipment for cutting and bending billets, rolling machine, grooving machine and manual tools, using and bending the billet manually, regular thruster, list and drawing method, simple discretizations, calculating the discreteness of the cut and missing actuators.	Power point, Lecture	Tests and reports
8	2	Knowledge and Experimental application	Training on calculating the individual intersecting works, performing an exercise for two intersecting cylinders.	Power point, Lecture	Tests and reports
9	2	Knowledge and Experimental application	Singular cones and conic ellipses.	Power point, Lecture	Tests and reports

10	2	Knowledge and Experimental application	-Lathing (6 weeks) The lathe, its specifications, uses, accessories, installation methods, operating the lathe, types of lathe pens using each of them.	Power point, Lecture	Tests and reports
11	2	Knowledge and Experimental application	Lathing operations: Plane lathe, tool, center work, simple step drill, use of measuring tools.	Power point, Lecture	Tests and reports
12	2	Knowledge and Experimental application	Mapping the external looting in different ways, explaining the laws for each method, and doing an exercise specifically for the external looting.	Power point, Lecture	Tests and reports
13	2	Knowledge and Experimental application	1-Working out the different teeth externally (the triangle). Doing an exercise that includes the triangle tooth 2- Make the tooth an outer square and make an exercise.	Power point, Lecture	Tests and reports
14	2	Knowledge and Experimental application	Cutting speeds, selecting them, and using their tables.	Power point, Lecture	Tests and reports
15	2	Knowledge and Experimental application	Implementing training on decentralized turning and using quadrilateral sampling.	Power point, Lecture	Tests and reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Introducing the student to the field of electronics and electricity by introducing the basic scientific concepts related to engineering and harnessing them in this field and pushing the students towards scientific research outside the framework of the academic curriculum

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Principles of Electronics (EOTO100)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Introducing the basic scientific concepts related to engineering and harnessing them in the field of electronics and electricity
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Qualifying the graduate scientifically in the field of electronics and electricity by introducing the basic scientific concepts related to engineering and harnessing them in this field and pushing students towards scientific research outside the framework of the academic curriculum	
B - The program's marathi goals		
B-1	Ability to manage projects The ability to solve problems at the work site and solve crises in this field	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carrying out his duties at the work site for professional motives.	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Semiconductor theory - atomic structure - energy levels - crystals - conduction in crystals / gap current - how gaps move	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Inoculation - P-type positive crystal - negative N-type crystal, electron current and gap current - total resistance.	Practical+Theoretical	Quizes+Reports
3+4	4	Acknowledgment and Practical application	Semiconductor diodes - PN connection - evacuation zone configuration - diaphragm voltage - power hill - thermal effects - diode bias - forward bias - reverse bias - forward and reverse characteristic curves - fleeting current - minority carriers current - permissible leakage current - refraction voltage - Breakdown voltage - Greatest forward current - Greatest Reverse current - Equivalent circuit of the diode.	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Binary as current-uniform half-wave-value-constant value and calculation-effective-output frequency	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Full wave unification - using a mid-branch transformer - gantry uniform - calculation of continuous and effective values of voltages and currents - output frequency. Comparison between half-wave and full wave unification - a comparison between full wave units.	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Filters - capacitive filtration - LC and RC filters - output voltages - ripple - voltage multipliers - trim circuits - positive trim - negative trim - composite trim - peak-to-peak detector - positive and .negative clamps	Practical+Theoretical	Quizes+Reports
8+9	4	Acknowledgment and Practical application	Zener diode - structure - symbol - forward and reverse properties -	Practical+Theoretical	Quizes+Reports

			breakdown and refraction potentials - zener impedance - power tolerance - temperature effects - zener approximation - constant voltage regulation - constant voltage source circuit - variable capacitance diode and its applications.		
10+11	4	Acknowledgment and Practical application	Bipolar transistor - combination - symbol - properties - regions - definition (Bdc) - definition (Cdc) - relationship between them - definition of important regions on characteristic curves - transistor bias circuits - base bias - emitter bias - collector bias - approximation in transistor and circuit Equivalency.	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Transistor characteristic curves - Work areas - Icbo definition, Iceo - Current gain curve - Relationship between Ic, Icbo.	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Transistor bias - base bias - emitter bias circuits.	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Collector bias, self-bias, feed-back bias, voltage divider bias, practical examples.	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Action points, sleep points, practical examples.	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

curriculum description form

Study the concept of electricity, electrical voltage, insulating materials, direct current, and how to connect an electrical circuit

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**DC Electrical circuits (EOTO101)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student's ability to scientifically connect electrical circuits in the laboratory and identify errors
9	curriculum outcomes and teaching, learning and evaluation methods	

A - Cognitive objectives

A-1	Study the concept of electricity, electrical voltage, insulating materials, direct current, and how to connect an electrical circuit

B - The program's marathi goals

B-1	The traditional method of giving a lecture .Using modern technologies in some topics (smart board - data show and using devices) Modern laboratory

Teaching and learning methods

((Theoretical lectures/practical lectures))

Evaluation methods

.((Oral exams / written exams / semester and final exams))

C - emotional and value goals

C-1	The student's ability to scientifically connect electrical circuits in the laboratory Developing the student's ability to identify errors in connecting electrical circuits

Teaching methods

((Theoretical lectures/practical lectures))

Evaluation methods

.((Oral exams / written exams / semester and final exams))

D- General and qualifying transferred skills (other skills related to employability and personal development)

D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work

10. Curriculum structure

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Electric units system-Mathmatic applications-definition of basic units of voltage, current and resistance-electric circuit components-ohm's law- factors effecting on resistance- resistivity of conductors and insulators- effect of temp. on resistance-temp. Coeff. of resistance- Examples	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	DC current circuits includes: -Series connection of resistances and examples -Parallel connection of resistances and examples -Combind connection of resistances and examples -Star and delta connection of resistances, conversion between star and delta with examples	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Applications on series, parallel, combind and star-delta connections	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Kirchoff Laws-Kirchoff current and voltage laws with examples	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Maxwell's law with examples	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgme	Definition of Thevinin's theorem-	Practical+Th	Quizes+Report

		nt and Practical application	How to apply in dc current	eoretical	s
7	4	Acknowledgment and Practical application	Definition of Norton's theorem- How to apply in dc current	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Examples on Thevinin's and Norton's theorems	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Definition of Supper position theorem-application of it in dc current-examples-Max. power transfer theorem with examples	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	AC quantities-definintion of AC current characterstics – generation of AC current with waveform drawing-RMS value-Form factor – examples	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	Vector of AC quantities-definintion of it – Phasor representation of its-phase angle-resultant of vector AC add., Subt., multiply, division with examples	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Effect of AC current on only resistance circuit-only inductance circuit-only capacitor circuit-phase angle between voltage and current with examples	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Effect of AC current on resistance and inductance in series circuit-resistance and capacitor in series-resistance and inductance and capacitor in series-phase angle- total impedance with examples	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Effect of AC current on resistance and inductance in parallel circuit-resistance and	Practical+Theoretical	Quizes+Reports

			capacitor in series- resistance and inductance and capacitor in series- phase angle- total impedance with examples		
15	4	Acknowledgment and Practical application	Using j-operator to find total impedance- total admittance- current, voltage and phase angle for impedances in series and parallel with examples	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

curriculum description form

Teaching the student to build logical and digital circuits and teaching him the basics of the binary system by introducing the basic scientific concepts related to engineering and harnessing them in this field

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Principles of digital circuits (EOTO102)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student the basics of the binary system and building logical and digital circuits
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Building logical and digital circuits and teaching the student the basics of the binary system	
B - The program's marathi goals		
B-1	The traditional method of giving a lecture .Using modern technologies in some topics (smart board - data show and using devices) Modern laboratory	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Developing industrial reality Diagnosing and treating defects	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improving his physical fitness and increasing his ability to bear the muscular and motor demands of work	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	A general idea of numerical systems (types and details)	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Transfers between the numerical systems	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Logic gates (types, working principle, truth tables, logical symbol)	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	How to connect the logic gates to form logic circuits.	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Boolean algebra and the rule of de-Morgan	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Simplification of logical equations using Boolean algebra and the laws of De Morgan's laws.	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	The design of the logical gates using NOR and NANDcircuits,	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Ways of writing the equation from truth table (POS, SOP).	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Karnaugh Map (for two variables, the three variables, the four variables)	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Simplification of logical equations using Karnaugh Map	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	Calculations in the binary system (addition, subtraction, subtraction using complements).	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Logic circuit applications(half adder, full adder, parallel adder circuits)	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical	Binarysubtractorcircuits (half subtractor,full subtractorparallel	Practical+Theoretical	Quizes+Reports

		application	subtractor) circuit using the adder circuit by method of 1s complements.		
14	4	Acknowledgment and Practical application	The circuit of digital comparator (one stage and two stages)	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	The circuit of decoder size of 2:4 ,3:8 and 4:10	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

curriculum description form

Introducing the student to electronic boards, dealing with them, and giving the student experience and mastery of working with them

1	Educational institution	Northern Technical University / Technical Institute Aldour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Electronic workshop (EOTO103)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Identifying and dealing with electronic boards and giving the student experience and proficiency in working with them
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Identifying and dealing with electronic boards and giving the student experience and proficiency in working with them	
B - The program's marathi goals		
B-1	Ability to manage projects Ability to solve problems on the job site in this field	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	How to use the different measuring devices in the workshop such as (avometer, oscilloscope, power .supply, ...)	practical	Quizes+Reports
2	2	Acknowledgment and Practical application	How to use caustics - Types of irons used in the workshop - Training in caustic .welding	practical	Quizes+Reports
3	2	Acknowledgment and Practical application	How to use soldering absorbent caustics - the number of soldering removers such as solder sucker, older remover, training on some electronic components and placing them in the printed plate, caustics used in welding integrated electronic circuits - the correct method for welding ICs - How to remove solder from the terminals of an electronic circuit and remove it from the .circuit	practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Different printed electronic circuits - Learn how to perforate them and attach the various electronic .components to them	practical	Quizes+Reports
5	2	Acknowledgment and Practical application	The different types of resistors in terms of the material of the resistors - the power that each resistance bears - How to read the values of the resistors in different ways - The variable and special resistors (VDR, PTC, NTC) and .how to check it	practical	Quizes+Reports

6	2	Acknowledgment and Practical application	Make a circuit to connect the resistors in series / Make a circuit to connect the resistors in parallel Make a circuit to connect the resistors in series and parallel within the circuit	practical	Quizes+Reports
7	2	Acknowledgment and Practical application	The different types of capacitors in terms of the type of dielectric used between their panels and the voltage they bear - reading the values of capacitors in different ways - how to check capacitors and methods of switching them - making circuits to connect the capacitors in series, parallel and mixed connection on the printed plate with .examination	practical	Quizes+Reports
8	2	Acknowledgment and Practical application	The different types of switches used in electronic devices and their inspection methods - the current that each switch carries - the use of .each type Types of fuses used in electronic circuits - Types and diameters of wires used in fuses - Current that each type carries - How to repair .fuses	practical	Quizes+Reports
9	2	Acknowledgment and Practical application	Files - their types - methods of checking them - their uses - identifying faults and reading file types that use color coding and .numbering Electrical transformers - types - methods of examination - determination of the type of transformer autotransformer - the difference between autotransformers and .ordinary transformers	practical	Quizes+Reports
10	2	Acknowledgment	The different types of	practica	Quizes+Reports

		and Practical application	semiconductors (diode, transistor, etc.) in terms of how they are manufactured, the materials used in their manufacture, the methods of numbering them and finding their .equivalents	l	
11	2	Acknowledgment and Practical application	Checking semiconductors (diode, transistor, etc.) that are idle and valid for a .group of them	practica l	Quizes+Reports
12	2	Acknowledgment and Practical application	Integrated Circuits - Identifying the numbering of the terminals for several types of these circuits - How to manufacture these circuits - The components involved .in manufacturing	practica l	Quizes+Reports
13	2	Acknowledgment and Practical application	A scientific film about how electronic components are made (resistors, capacitors, .transistors, ... etc)	practica l	Quizes+Reports
14	2	Acknowledgment and Practical application	How to read electronic maps and follow circuits to determine the location of the malfunction and its .causes	practica l	Quizes+Reports
15	2	Acknowledgment and Practical application	The student learned how to design electronic circuits on the board and install electronic components on it - how to solder these components on the board (simple .circuit)	practica l	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Teaching the student the basic principles of drawing and increasing his ability to understand dimensions and measurements and the ability to analyze shapes and benefit from its applications in his field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Engineering Drawing (EOTO104)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Introducing the student to using the AutoCAD system with applications in his field of specialization
9	curriculum outcomes and teaching, learning and evaluation methods	
	A - Cognitive objectives	
A-1	The student's knowledge of the basic principles of drawing and increasing his ability to understand dimensions and measurements and the ability to analyze shapes	
	B - The program's marathi goals	
B-1	Developing industrial reality through advanced engineering programs	
B-2	The ability to contain the crisis at the work site, address it quickly, and work in a team spirit	
	Teaching and learning methods ((Theoretical lectures/practical lectures))	
	Evaluation methods .((Oral exams / written exams / semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures/practical lectures))	
	Evaluation methods .((Oral exams / written exams / semester and final exams))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Drawing Engineering and industrial drawing - Drawing tools and their use in drawing Vertical static image - Drawing dimensions - Drawing data table - Image, line and surface definitions.	practical	Quizes+Reports
2	2	Acknowledgment and Practical application	Drawing line types: straight line, hidden line, center line, cutting line, cutting line for small parts, cutting line for large parts, cutting plane line, dimension line and extension line (painting drawing).	practical	Quizes+Reports
3	2	Acknowledgment and Practical application	Another painting on lines includes a group of simple geometric shapes and contains a group of lines.	practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Explanation of electrical and electronic symbols	practical	Quizes+Reports
5	2	Acknowledgment and Practical application	Drawing of electrical and electronic symbols panel	practical	Quizes+Reports
6	2	Acknowledgment and Practical application	Writing Latin letters and numbers - a board that includes writing numbers and letters in a vertical and then tilted angle at 575 in the size of four mm to ten mm.	practical	Quizes+Reports
7	2	Acknowledgment and Practical application	Continuation of the previous painting	practical	Quizes+Reports
8	2	Acknowledgment and Practical application	How to distribute and install measuring devices (ammeter - voltmeter - wattmeter), protective devices (separators - fuses - cutting devices - circuit breakers -	practical	Quizes+Reports

			switches).		
9	2	Acknowledgment and Practical application	Geometric operations include: 1 - dividing a straight line in equal and unequal proportions 2 - dividing a straight line 3 - establishing a column on a line or an arc from a point inside and outside it 4 - drawing a straight line parallel to a known line at a known distance 5 - bisection of an angle 6 - finding the center of a known arc or circle 7 - drawing a circle touching The sides of a floating triangle inside and out (one panel drawing).	practical	Quizes+Reports
10	2	Acknowledgment and Practical application	Drawing the tangents of the circle: 1- Drawing an arc touching two circles known from the inside 2- Drawing an arc touching two circles known from the outside 3- Drawing a straight line that touches two circles known from the outside 5- Drawing an arc of a known radius that touches a straight line and a known circle.	practical	Quizes+Reports
11	2	Acknowledgment and Practical application	Drawing a regular polygon given the length of the side in the general method, drawing a regular pentagon given the diameter of the circle, drawing a regular hexagon given the diameter of the circle - drawing a circle's perspective at an angle of 30.	practical	Quizes+Reports
12	2	Acknowledgment and Practical application	Electrical installations - Drawing a special board for electrical installations for a	practical	Quizes+Reports

			room with an attached storeroom.		
13	2	Acknowledgment and Practical application	Drawing a painting of the complete connections of the fluorescent tube	practical	Quizes+Reports
14	2	Acknowledgment and Practical application	Draw an electronic circuit board containing a group of electronic circuits.	practical	Quizes+Reports
15	2	Acknowledgment and Practical application	Draw a simple hologram at angle 30 and angle 45.	practical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Teaching the student the field of electronics and electricity by introducing the basic scientific concepts related to engineering and harnessing them in this field

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Electronics (EOTO105)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Introducing the basic scientific concepts related to the field of electronics and electricity and harnessing them in this field
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Qualifying the graduate scientifically in the field of electronics and electricity by introducing the basic scientific concepts related to engineering and harnessing them in this field and pushing students towards scientific research outside the framework of the academic curriculum	
B - The program's marathi goals		
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site and solve crises in this field	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carrying out his duties at the work site for professional reasons	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Transistor continuous equivalent circuit-constant load line-.	Practical+Theoretical	Quizes+Reports
2+3	4	Acknowledgment and Practical application	Using the transistor to amplify small signals - AC circuit - Current gain - Voltage gain - Power gain - Perfect approximation - Hybrid constants - Equivalent circuit using h coefficients - Voltage gain - Current gain - Power gain - Input and output resistors - Small signal amplifiers - Al-Qaeda Market - Al-Ba`ith Market.	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	The use of the transistor in voltage regulation - series regulator - parallel regulator - DC voltage source circuit.	Practical+Theoretical	Quizes+Reports
5+6	4	Acknowledgment and Practical application	Field Effect Transistor - Structure - Curved MOSFET - E-MOSFETD-MOSFET - Wicker Curve - Tight Strength Curves Vgs, Idss, Vp - Comparison of BJT, JFET-theoretical Work	Practical+Theoretical	Quizes+Reports
7+8	4	Acknowledgment and Practical application	FET Biasing Circuits - Constant Current Source Biasing - Action Point - Self Biasing - FET Equivalent Circuit - Using FET in Small Signal Amplification - Comparison of FET Types - (MOSFET, FET) (BJT)	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Light Dependent Resistor - Light Emitting Diode - Photodiode - Phototransistor - Seven Pieces Board - Structure and Applications.	Practical+Theoretical	Quizes+Reports
10+13	4	Acknowledgment and Practical application	Current-controlled silicon modulators (thyristors) - structure and types - properties - theoretical work - triac - dayac - their symbol - properties - theoretical work - comparison between thyristors, dyacs and triacs - protection of thyristors (from voltage change, from	Practical+Theoretical	Quizes+Reports

			changing current).		
14	4	Acknowledgment and Practical application	Operations amplifier 741 - its symbol - its connection terminals - its uses	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Integrated circuits - meaning - their advantages and disadvantages - a comparison between them and the separate components - an idea of their manufacture - operations amplifier 741 - its symbol - its connection terminal - its uses - operations amplifier applications - small signal amplification - signal collection - signal subtraction - examples. Operations amplifier applications: differential, comparative, integrator, template, etc	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Study the concept of electricity, electrical voltage, insulating materials, direct current, and how to connect an electrical circuit

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**AC electrical circuits (EOTO106)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student's ability to connect electrical circuits scientifically in the laboratory and identify errors in connecting electrical circuits
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Study the concept of electricity, electrical voltage, insulating materials, direct current, and how to connect an electrical circuit	
B - The program's marathi goals		
B-1	The traditional method of giving a lecture	
B-2	Using modern technologies in some topics (smart board - data show) and using devices Modern laboratory	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	The student's ability to scientifically connect electrical circuits in the laboratory	
C-2	Developing the student's ability to identify errors in connecting electrical circuits	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Series and Parallel resonance circuits-calculation of voltage, current, impedance, phase angle and frequency at resonance with examples	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Applications of Thevinin's, Norton's and supper postion theorems with examples	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Calculation of power in AC circuits-only resistance circuit-only inductance circuit-only capacitor circuit-resistance, inductance and capacitor in series and parallel-active and reactive power	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Appearnt power-power triangle drawing- power factor correction	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Max. power transfer in AC circuits- with examples	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Networks analysis using Nodel analysis-number of nodel equations	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Examples on Networks analysis using Nodel analysis	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	AC three phase circuits-generation of 1-phase, 2-phase and three phase current-star delta connection-phase power-line power- total power-examples	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Examples on AC three phase circuits with star delta coonections	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Methods of power measurement for three phase loads-	Practical+Theoretical	Quizes+Reports

			wattmeter- two wattmeter-three wattmeter		
11	4	Acknowledgment and Practical application	Transient cases in circuits- DC transient – RL-RC-RLC transient	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Transient AC currents– Sinosoidal Transient currents in RL-RC-RLC circuits	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Self induction of coil- equation of self induction- mutual induction between two colis: Progresive - Series connection Reverse - Series connection	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Transformers- structure-drawing- charecterstics- its operation and relationships- types of its-examples	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Curves of current in induction circuit- current drawing and calculation of time constant-charge, discharge the capacitors-time constant effect- examples.	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Introducing and teaching the student to build logical and digital circuits and teaching him the basics of the binary system and benefiting from it in his specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Digital circuits applications (EOTO107)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	4 hours per week (60 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Building logical and digital circuits and teaching the student the basics of the binary system
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Building logical and digital circuits and teaching the student the basics of the binary system	
B - The program's marathi goals		
B-1	The traditional method of giving a lecture	
B-2	Using modern technologies in some topics (smart board - data show) and using devices Modern laboratory	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Developing industrial reality	
C-2	Diagnosing and treating defects	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	The circuit of encoder size of 4:2, 8:3 and 10:4	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Introduction to sequential logic circuits, a general idea of the Flip Flop, flip flop type (S-R).	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	The flip flop type J-K and master slave flip flop	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	The D- flip flop and T flip flop	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	The registers, design of registers, enter the information and output from registers	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	The shift register, shift to left, shift to right	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	The counter- asynchronous counter	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	The synchronous counter- the cycle counter	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	The multiplexer and its applications	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	The code convertor – the application of code convertor	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	Programmable logic array: Concepts of programmable logic array(PLA); Concepts of programmable array logic(PAL)	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Buffers, Non inverting buffers, inverting buffers, Tri-state buffers, transmission gates	Practical+Theoretical	Quizes+Reports

13	4	Acknowledgment and Practical application	Introduction to Sequential logic latches and flip flops, Latches-Edgetriggered flip flop, Flip-flop operating characteristics, Flip-flop applications	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Introduction To State Machine Design,	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	State diagram and State table	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

The student's knowledge of the basic principles of drawing electrical circuits and increasing his ability to understand dimensions and measurements and the ability to analyze shapes

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Electrical Drawing (EOTO108)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Introducing the student to how to draw electrical drawings using the AutoCAD system and benefiting from other applications in this field
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	The student's knowledge of the basic principles of drawing electrical circuits and increasing his ability to understand dimensions and measurements and the ability to analyze shapes	
B - The program's marathi goals		
B-1	Developing industrial reality through advanced engineering programs	
B-2	The ability to contain the crisis at the work site, address it quickly, and work in a team spirit	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure					
Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Explaining the dimensions of the drawing in a geometric way, drawing a painting that includes two perspectives with all dimensions in a geometric way.	practical	Quizes+Reports
2	2	Acknowledgment and Practical application	Drawing complex perspective that contains cylindrical shapes or cavities - drawing a painting that includes two perspectives with writing the dimensions in a geometric way.	practical	Quizes+Reports
3	2	Acknowledgment and Practical application	Supplement the previous topic with a panel drawing.	practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Drawing of an electronic circuit board containing gates Gates.	practical	Quizes+Reports
5	2	Acknowledgment and Practical application	Drawing of an electronic circuit board containing integrated circuits	practical	Quizes+Reports
6	2	Acknowledgment and Practical application	Drawing of an electronic circuit board containing gates and integrated circuits	practical	Quizes+Reports
7	2	Acknowledgment and Practical application	Applications for drawing projections from different perspectives.	practical	Quizes+Reports
8	2	Acknowledgment and Practical application	Draw perspective from the three projections	practical	Quizes+Reports
9	2	Acknowledgment and Practical application	Cutting in objects, angle of cutting - cutting lines (marking). Definition of unbroken parts (focusing on complete cutting only). Panel	practical	Quizes+Reports

			that includes projections after cutting.		
10	2	Acknowledgment and Practical application	Drawing board to control the speed of a three-phase motor	practical	Quizes+Reports
11	2	Acknowledgment and Practical application	How to read a map or a set of maps for electrical circuits.	practical	Quizes+Reports
12	2	Acknowledgment and Practical application	Electrocardiogram applications on an electronic calculator.	practical	Quizes+Reports
13	2	Acknowledgment and Practical application	Using the Auto CAD system.	practical	Quizes+Reports
14+15	2	Acknowledgment and Practical application	Use of the orcad system.	practical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

The student learns how to use electronic boards and how to deal with them, and gives the student experience and proficiency in working with them, and designs a more complex circuit

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	**Electrical workshop (EOTO109)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\ First Level.
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Identifying and dealing with electronic boards and providing students with experience and proficiency in working with them
9	curriculum outcomes and teaching, learning and evaluation methods	
A - Cognitive objectives		
A-1	Identifying and dealing with electronic boards and giving the student experience and proficiency in working with them	
B - The program's marathi goals		
B-1	Ability to manage projects	
B-2	Ability to solve problems on the job site in this field	
Teaching and learning methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures/practical lectures))		
Evaluation methods .((Oral exams / written exams / semester and final exams))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Electrical Workshops First level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Repetition of previous work by the student designing a more complex circuit.	practical	Quizes+Reports
2	2	Acknowledgment and Practical application	Faulty semiconductor-transistor and diode check for a combination of them.	practical	Quizes+Reports
3	2	Acknowledgment and Practical application	A field visit to one of the industrial establishments in the socialist sector.	practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Building complex and simple electronic circuits on printed boards and knowing how to check and test them, such as a filter circuit.	practical	Quizes+Reports
5	2	Acknowledgment and Practical application	Building a uniform half-wave circuit on the printed board and knowing how to inspect and test it.	practical	Quizes+Reports
6	2	Acknowledgment and Practical application	Building a full wave circuit on the printed board and knowing how to inspect and test it.	practical	Quizes+Reports
7	2	Acknowledgment and Practical application	Building a full wave voltage multiplier circuit on the printed board and knowing how to inspect and test it.	practical	Quizes+Reports
8	2	Acknowledgment and Practical application	Building the clippers circuit on the printed board and identifying how to check and test it.	practical	Quizes+Reports
9	2	Acknowledgment and Practical application	Using the Zener Diode as a voltage regulator circuit on the printed board and learning how to check and test it.	practical	Quizes+Reports
10	2	Acknowledgment and Practical application	Building a transistor amplifier circuit on a printed board and knowing how to check	practical	Quizes+Reports

			and test it (build a practical common .emitter amplifier circuit		
11	2	Acknowledgment and Practical application	Building a two-stage amplifier circuit on the printed board and knowing how to inspect .and test it	practical	Quizes+Reports
12	2	Acknowledgment and Practical application	Building a push-pull amplifier circuit on the printed board and knowing how to check .and test it	practical	Quizes+Reports
13	2	Acknowledgment and Practical application	Building a RC Oscillator circuit on printed board and knowing how to .inspect and test it	practical	Quizes+Reports
14	2	Acknowledgment and Practical application	Building a Hartley circuit on a flip chart and learning how to inspect .and test it	practical	Quizes+Reports
15	2	Acknowledgment and Practical application	Build a variable DC voltage supply circuit on the printed board and learn how to check and .test it	practical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
-Creating appropriate curricula with the labor market -Holding scientific seminars and conferences aimed at updating school curricula -Follow up on scientific developments in the field of specialization	

Curriculum description form

Strengthening students' learning to use English as a foreign language in order to help them enrich their knowledge and understanding of terms and phrases and strengthen their four skills (reading, writing, speaking and listening).

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	English language (NTU 200)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student how to use English grammar in conversation
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Identify tenses in English grammar.	
A-2	Identifying interrogative tools in the English language.	
	B - The program's marathi goals	
B-1	.Ability to converse in English	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Intellectual questions	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	The ability to use the English language in daily and practical life.	
D-2		

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	Questions words	Unit one :getting to know you tenses Questions Questions words	Theoretical + practical	Daily tests
2	2	Present simple	Unit two :the way we live Present tenses Present simple Present continuous Have /have got	Theoretical + practical	Daily tests
3	2	Past simple	Unit three: it all went wrong Past tenses Past simple Past continuous	Theoretical + practical	Daily tests
4	2	Some and any	Unit four :let's go shopping Quantity Much and many Some and any Something,anyone,nobody,every where A few, a little, a lot of Articles	Theoretical + practical	Daily tests
5	2	do Past tenses	Init five ,what go You want to do Past tenses Verb patterns'\ Future intentions Going to and will	Theoretical + practical	Daily tests
6	2	comparative and superlative Adjectives	Unit six: tell me! What's it like? What's it Iike? comparative and superlative Adjectives	Theoretical + practical	Daily tests
7	2	For and since Tense revision	Unit seven :fame Present Perfect and For and since Tense revision	Theoretical + practical	Daily tests
8	2	do's and don'ts	Fn'rt eight: do's and don'ts Have(got) to Shou ld must	Theoretical + practical	Daily tests
9	2	what if ?	Unit nine: going Places Time and conditional clauses what if ?	Theoretical + practical	Daily tests
10	2	Verbs Patterns lnfinitives	Unit ten: scared to death Verbs Patterns lnfinitives What ,etc.+infin itive Something,etc.+infinitive	Theoretical + practical	Daily tests

11	2	world passives	Unit eleven: Things that changed the world passives	Theoretical + practical	Daily tests
12	2	conditional might	Git t*utr" :dreams and realitY Second conditional might	Theoretical + practical	Daily tests
13	2	Present Perfect continuous	tlnit thitt""n ;c i,.ltll :earning a living Present Perfect continuous Present Perfect simPle versus Continuous	Theoretical + practical	Daily tests
14	2	perfect and past perfect and clarification	Unit fourteen: familY ties Present perfect and past perfect and clarification Reported statements	Theoretical + practical	Daily tests
15	2		Unitfifteen : revision	Theoretical + practical	Daily tests

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

curriculum description form

Consolidating the principles of human rights among students in order to achieve a correct understanding of these rights based on Islamic concepts, comparing them to international conventions, and spreading the culture of human rights in society. Enabling students to explain the concept of democracy, distinguish this concept from other concepts, and understand the meaning of responsibility and respect for the rights and freedoms of others.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	Curriculum name and code	Computer (NTU 201)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\Second Level
6	Number of study hours (total)	2 hours per week (30 hours).
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student's familiarity with various computer applications and the ability to distinguish between the types of software that can be dealt with, and to learn about artificial intelligence and the prospects for dealing with it and how to benefit from it in all .areas of life
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Teaching the student to recognize work applications on the calculator and use their applications within the specialization	
	B - The program's marathi goals	
B-1	Teaching the student the skills of working on a calculator and using its ready-made applications and Internet principles	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carrying out his duties at the work site using a computer	
	Teaching methods .((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	

D-1	Improving their discussion skills
D-2	

10. Curriculum structure

Computer Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Security and Networking: What is a network? Types of networks. Basic network components. Network Security Basics. Understanding network threats. Network Troubleshooting	Practical+Theoretical	Quizes+Reports
2 and 3	2	Acknowledgment and Practical application	E-Commerce : Concepts Of Electronic banking services this include online banking: ATM and debit card services, Phone banking, SMS banking, electronic alert, Mobile banking.	Practical+Theoretical	Quizes+Reports
4 and 5	2	Acknowledgment and Practical application	Computer Troubleshooting: identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving	Practical+Theoretical	Quizes+Reports
6 And 7	2	Acknowledgment and Practical application	Introduction to AI: Definition of AI, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	Practical+Theoretical	Quizes+Reports
8 And 9	2	Acknowledgment and Practical application	AI in Our Daily Lives: AI in smartphones and virtual assistants like Siri or Google Assistant.)	Practical+Theoretical	Quizes+Reports
10 And 11	2	Acknowledgment and Practical application	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising.	Practical+Theoretical	Quizes+Reports
12 And 13	2	Acknowledgment and Practical application	AI and Society: (How AI affects social, AI and International relations, AI and the future of humanity.)	Practical+Theoretical	Quizes+Reports
14	2	Acknowledgment	Ethical Challenges in AI (AI ethics, privacy and	Practical+Theoretical	Quizes+Reports

		and Practical application	surveillance, the impact of AI on the job market.)		
15	2	Acknowledgment and Practical application	The Future of AI (Future trends in AI, recent research and emerging technologies.)	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

ccurriculum description form

Teaching the student how to preserve the classical language, staying away from colloquialism, and helping the student to write free of spelling and correspondence errors by adjusting the rules of the Arabic language.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	Arabic Language (NTU 202)
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks)\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching the student to use the Arabic language in administrative correspondence, and developing his skills in this field.
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Teaching the student how to preserve the classical language	
	B - The program's marathi goals	
B-1	Learn how to write in official correspondence in a manner free of spelling errors by adjusting the rules of the Arabic language	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Intellectual questions	
C-2		
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improving his ability to communicate in Arabic and avoiding mistakes.	

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	**2**	The subject and the predicate	The subject and the predicate	Theoretical + practical	Daily tests
2	**2**	The verb, the subject and the object	The verb, the subject and the object	Theoretical + practical	Daily tests
3	**2**	Intransitive and transitive verb	Intransitive and transitive verb	Theoretical + practical	Daily tests
4	**2**	Pronouns	Pronouns	Theoretical + practical	Daily tests
5	**2**	Parsing marks	Original and secondary grammatical signs	Theoretical + practical	Daily tests
6	**2**	The five actions	The five actions	Theoretical + practical	Daily tests
7	**2**	Conjunctions	Conjunctions and their meanings	Theoretical + practical	Daily tests
8 9	**2**	The hamza	The connecting and severing link	Theoretical + practical	Daily tests
10	**2**	Extra characters	Extra characters	Theoretical + practical	Daily tests
11	**2**	Nun and Tanween	Nun and Tanween	Theoretical + practical	Daily tests
12 13	**2**	Administrative discourse	Administrative discourse	Theoretical + practical	Daily tests
14 15	**2**	The most common linguistic errors	The most common linguistic errors in official books	Theoretical + practical	Daily tests

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Providing the student with comprehensive information about the crimes of the Baath regime in accordance with the law of the Iraqi Criminal Court in 2005 AD, as it introduces the student to the concept of crime, its categories, and the international crimes for which the leaders and associates of the Baath regime were sentenced according to the law of the Supreme Iraqi Criminal Court.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	The crimes of the Baath regime in Iraq (NTU 203)
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Identifying the crimes of the Baath regime according to the Iraqi Supreme Criminal Court Law of 2005.
9	curriculum outcomes and teaching, learning and evaluation methods	
A-Cognitive objectives		
A-1	Knowledge of crimes and their types.	
A-2	Identifying all types of Baath crimes.	
A-3	Identify the types of crimes	
B - The program’s marathi goals		
B-1	The student makes a judgment on the previous system by reviewing its history.	
B-2	The student has sufficient insight into what happened during the previous period of rule.	
Teaching and learning methods ((Theoretical lectures/discussions))		
Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))		
C - emotional and value goals		
C-1	.Intellectual questions	
Teaching methods ((Theoretical lectures / practical lectures))		
Evaluation methods ((Oral exams / written exams / observation / student cumulative record))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		

D-1	Working to preserve and respect human rights regardless of their values and beliefs, and staying away from extremism and violence due to differences in belief and doctrine.

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1	2	The concept of crimes and their types	The concept of crimes and their types	Theoretical lectures + presentation on smart screens	Daily tests
2	2	Definition of crime	Definition of crime	Theoretical lectures + presentation on smart screens	Daily tests
3	2	Crime departments	Crime sections, Baath crimes	Theoretical lectures + presentation on smart screens	Daily tests
4	2	Types of international crimes	Types of international crimes: Decisions issued by the Supreme Criminal Court	Theoretical lectures + presentation on smart screens	Daily tests
5	2	Psychological and social crimes	Psychological and social crimes and their effects	Theoretical lectures + presentation on smart screens	Daily tests
6	2	Mechanisms of psychological crimes	Psychological crimes, mechanisms of psychological crimes, effects of psychological crimes	Theoretical lectures + presentation on smart screens	Daily tests
7	2	Social crimes	Social crimes, militarization of society. The Baathist regime is successful in religion	Theoretical lectures + presentation on smart screens	Daily tests
8	2	Violations of Iraqi laws	Violations of Iraqi laws. Pictures of human rights violations and crimes of power	Theoretical lectures + presentation on smart screens	Daily tests
9	2	Intra-criminal crimes	Environmental crimes of the Baath regime in Iraq	Theoretical lectures + presentation on smart screens	Daily tests

10	2	Military pollution	Military and radioactive contamination and mine explosions	Theoretical lectures + presentation on smart screens	Daily tests
11	2	Destruction of cities and villages	Destruction of cities and villages	Theoretical lectures + presentation on smart screens	Daily tests
12	2	Drying the marshes	Drying the marshes.	Theoretical lectures + presentation on smart screens	Daily tests
13	2	Destroying orchards and palm trees	Destroying orchards and palm trees	Theoretical lectures + presentation on smart screens	Daily tests
14	2	Jaam mass graves	Mass grave crimes. The cemeteries of the genocide committed by the Baathist regime in Iraq	Theoretical lectures + presentation on smart screens	Daily tests
15	2	Chronological classification of genocide graves	Chronological classification of genocide graves in Iraq for the period from 1963-2003	Theoretical lectures + presentation on smart screens	Daily tests

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan

- Creating appropriate curricula with the labor market
- Holding scientific seminars and conferences aimed at updating school curricula
- Follow up on scientific developments in the field of specialization

ccurriculum description form

Introducing the student to professional ethics and their applications in professional life, to enhance the student's commitment to them in himself and his work environment, and because they are among the most important reasons for success in his work and life.

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	Professional Ethics (NTU 204)
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student knows professional ethics, its applications in accounting work, and its role in the success of his work and life. The student acquires the skill of analyzing ethical phenomena in the work environment and can predict their effects and determine his position on them.
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Knowing the concept of morality and its origin.	
A-2	Work behaviors.	
	B - The program's marathi goals	
B-1	Professional ethics	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	.Intellectual questions	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Ethics required while practicing the profession	

10. Curriculum structure

Week	Time (H.)	Required Learning Outcomes	Topic Name	Education Method	Evaluation Method
1 **2**	**2**	Moral	Unit (1) – Ethics	Theoretical + practical	Daily tests
3	**2**	Work and profession	The concept of ethics and its origin.	Theoretical + practical	Daily tests
4	**2**	Professional ethics	General rules of ethics.	Theoretical + practical	Daily tests
5 **6**	**2**	Values and professional ethics	Sources of ethics.	Theoretical + practical	Daily tests
7 **8**	**2**	Unethical behavior in the profession	Unit (5) - Patterns of unethical behavior in the profession Administrative corruption. o Unethical administrative behavior. o Definition of administrative corruption. o Types of administrative corruption.	Theoretical + practical	Daily tests
9 **10**	**2**	Means and methods of consolidating the values of professional ethics	The importance of ethics for the individual and society.	Theoretical + practical	Daily tests
11 **12** **13** **14** **15**	**2**	Professional ethics	Unit (2) – Work and profession	Theoretical + practical	Daily tests

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan

- Creating appropriate curricula with the labor market
- Holding scientific seminars and conferences aimed at updating school curricula
- Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student how to build practical electronic circuits, studying their properties and applications, and learning about developing the student's ability to identify errors in connecting electronic circuits

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Electronic Circuit (1) (EOTO210)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Building practical electronic circuits, studying their properties and applications, and learning about developing the student's ability to identify errors in connecting electronic circuits
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Building practical electronic circuits and studying their properties and applications	
A-2	Developing the student's ability to identify errors in connecting electronic circuits	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Electronic Circuits(1) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1+3	4	Acknowledgment and Practical application	Class A power amplifiers Class B power amplifiers Class C . power amplifiers	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Power supplies	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Voltage regulators using variable resistance, zener diode, series and parallel transistor, darlinkton	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	thyristor firing methods thyristor switching methods gate circuit (AC), (DC), pulses, applications of silicon modules	Practical+Theoretical	Quizes+Reports
7+8	4	Acknowledgment and Practical application	Oscillators and their definition - backfeed and their types with drawing their diagrams and finding the mathematical relationships for the final amplification of the system (front gain - back gain - return circuit) - oscillation conditions - examples of oscillator circuits (LC	Practical+Theoretical	Quizes+Reports

			oscillator - Hartley oscillator - Coulps oscillator - phase shift oscillator)		
9+11	4	Acknowledgment and Practical application	Transistor as a switch - Specifications of its work on the load line - Its response to a rectangular input wave Transformation times - Vibrators and their different types (monostable unstable - bistable) Mathematical relationships - Collector and base resistors - Waveforms of input and output Circuits - Mug - The idea of their operation - Protection - Overcoming Possible distortions in the output signals - Pulse Width Control.	Practical+Theoretical	Quizes+Reports
12+13	4	Acknowledgment and Practical application	Operational amplifier - typical scheme - template input - non-template input - input impedance - template amplifier circuit output - non-template amplifier circuit gain - voltage function and amplification equation - host	Practical+Theoretical	Quizes+Reports

			- formula for adding N number of inputs - non-template host.		
14+15	4	Acknowledgment and Practical application	Inverter collector circuit and output equation - non-inverter collector circuit and output equation - arithmetic examples.	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Training the student to use microcomputer keys, write and implement programs in machine language, and methods for applying them in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Microcomputer (1) (EOTO211)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Training the student to use microcomputer keys and write and implement programs in machine language
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Training the student to use microcomputer keys and write and implement programs in machine language	
A-2		
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Microcomputers (1) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Introducing the vocabulary of the subject and the distribution of exam grades - numerical systems - the decimal system - the binary system - the octal system - the hexadecimal system and its importance for microcomputers - conversions between systems.	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Introducing microcomputers, their types, and their relationship to other electronic computers.	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Definitions of microcomputer terms: bit-byte-nibble-word-instruction-program-software-structures-high-level languages-low-level languages-assembly language-machine language.	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Microcomputer architecture - block diagram - input unit - keyboard - mouse - two types of mouse and comparison between them - input port	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	The transmission system - the data carrier - the address carrier - the lines of control	Practical+Theoretical	Quizes+Reports

			and control - the benefit of each - a comparison between them.		
6	4	Acknowledgment and Practical application	Output unit - screen - the difference between computer screen and TV screen - output port.	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Memory - main memory - read only memory - read and write memory - a comparison between them - auxiliary memories and the difference between them and the main memory.	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	CPU - Microprocessor - Definition - Block diagram showing the architecture of the microprocessor - Microprocessor 8085 - Terminal and block diagram for it - Data carrier bumpers - Address bus bumpers and a comparison between them.	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	General records - A record (accumulator) - arithmetic and logic unit - flags register - microprocessor notification 8085 - arithmetic example for determining the status of each flag and interpretation of the case - the utility of the flags record.	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Z-80 Microprocessor Notification and Comparison with 8085 Microprocessor Notification - Mathematical	Practical+Theoretical	Quizes+Reports

			Example - PC Program Counter - SP Stack Indicator - Instruction Log - Command Decoder - Control Unit		
11	4	Acknowledgment and Practical application	Directions of the 8085-Z80 microprocessor - the symbols used to remember - the machine language - a comparison between them - how to extract the codes in the machine language from the instructions table.	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Directions of the data transfer group and its types - solving examples - writing an application program.	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	The input and output instructions and their relationship to the data transmission group instructions - practical examples.	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	A set of arithmetic instructions and their types - practical examples - their use in enlarging the digital signal with an applied example.	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	The set of logical instructions and their types - practical examples - and their use in solving digital circuits	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student the types of devices used for continuous and alternating electrical measurements and solving problems at the work site

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Measurements Devices (1) (EOTO212)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Study the types of devices used for continuous and alternating electrical measurements and solve problems at the work site
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Interested in studying the types of devices used for continuous and alternating electrical measurements	
A-2		
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Measurements Devices (1) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Familiarity with laboratory equipment	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	errors in measurements	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Calvanometer sensitivity measurement	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Measurement of the internal resistance of the moving coil galvanometer by the voltage divider method	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Measurement of the internal resistance of the moving coil galvanometer by the mid-scaling method	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	series ohmmeter	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Ohmmeter parallel	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	DC test bridge for measuring unknown resistance	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	A direct current bridge to measure the internal resistance of a galvanometer	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Double Kelvin DC bridge	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	DC ammeter and extend its range	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical	Dual beam oscilloscope	Practical+Theoretical	Quizes+Reports

		application			
13	4	Acknowledgment and Practical application	Digital oscilloscope calibration	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Digital voltmeter calibration using OCD	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	DC voltmeter, extending its range.	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Providing the student with information about radio systems and structures and studying the types of transmitters, receivers, and wired and wireless communications for the purpose of the student's ability to benefit in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Communication (1) (EOTO213)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Introducing information about radio systems and structures and studying the types of transmitters, receivers, and wired and wireless communications
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Providing the student with information about radio systems and structures and studying the types of transmitters, receivers and wired and wireless communications	
A-2		
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Communication(1) second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Filters - BSF ((RC)) - (LPF) - (HPF) - (BPF)	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Active Filters (BSF): - LPF) - (HPF) - (BPF	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Modulation - its meaning - its types - modulation .(AM) vector analysis	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Frequency Spectrum - Power Distribution - Calculation of equivalent .modulation factor	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Types of modulated amplitude (AM) with its frequency spectrum	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Inline types used to generate (AM) Balanced Inline - Loop Inline - Coin Inline - Other .Inclusions	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	AM - Envelope Detector - Synchronous Detector - (AGC)	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Mass diagram of the amplitude embedded wave transmitter and receiver - comparative parameters of the amplitude of the receivers (sensitivity - selectivity - quality - .distortion)	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Frequency modulation (FM) modulation (PM) - mathematical analysis of inline waves - modulation ratio - .frequency deviation	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Transmission bandwidth and modulation bandwidth (PM) and .(FM)	Practical+Theoretical	Quizes+Reports

11	4	Acknowledgment and Practical application	FM modulation and generation methods - direct method, indirect method frequency modulation amplified (Secttreo FM) - Stero	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Detection for (FM) Signal - Relative Detector - Fostersley .Method	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Quantization - Theoretical Quantization - Transformation .Encoding	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Modulation (PM) - pulse modulation features - types (PCM) - (PPM) - .(PDM) - (PAM)	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Distribution (Multiplexing) - (FDM) - .(TDM)	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
•	Creating appropriate curricula with the labor market
•	Holding scientific seminars and conferences aimed at updating school curricula
•	Follow up on scientific developments in the field of specialization

Curriculum description form

Teach students the skill in the field of maintenance on electrical appliances and equipment and train them to diagnose faults and benefit from this experience in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Electronic instrumentation maintenance workshop (1) (EOTO214)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Maintenance of electrical appliances and equipment and training them with practical experiences in diagnosing faults
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Providing the student with skills in the field of maintenance on electrical appliances and equipment and training them with practical experiences in diagnosing faults	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Electronic instrumentation maintenance workshop (1) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Clarify the requirements of the electronic equipment maintenance workshops and the necessary equipment and train them, review the methods of maintenance, check (with the senses - the devices and the injection of signals), industrial safety and .security	Practical	Quizes+Reports
2	2	Acknowledgment and Practical application	View the block diagram of the Super Hetrodine radio - and the printout - use the gauges to determine the .malfunction	Practical	Quizes+Reports
3	2	Acknowledgment and Practical application	Practicing the map of the Super Heterodyne radio device and determining the locations of the components - practicing the application of the device's map with the printed board and conducting the .necessary tests	Practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Practicing to fix AF stage faults - malfunctions of the primary amplifier and the power .amplifier	Practical	Quizes+Reports
5	2	Acknowledgment and Practical application	Training on repairing the IF- and detector stage - malfunctions of the inter-amplifier and detector - adjusting and regulating the	Practical	Quizes+Reports

			inter-frequency .stage		
6	2	Acknowledgment and Practical application	Training in RF phase faults - mixer faults - local oscillator malfunctions	Practical	Quizes+Reports
7	2	Acknowledgment and Practical application	General malfunctions of the radio	Practical	Quizes+Reports
8	2	Acknowledgment and Practical application	Test the students with general exercises on the malfunctions of the radio	Practical	Quizes+Reports
9	2	Acknowledgment and Practical application	Identify the block diagram of a regular black and white television set - Identify the electronic units used and the complete units belonging to all stages of the .device	Practical	Quizes+Reports
10	2	Acknowledgment and Practical application	Training in reading the EIC TV map, identifying the locations of components, especially protection components and units, and applying the device map to the printed board - identifying the dangerous work areas and how to .deal with them	Practical	Quizes+Reports
11	2	Acknowledgment and Practical application	Training on the use of television testing devices with training on using the control and regulation keys on the front and back sides	Practical	Quizes+Reports
12	2	Acknowledgment and Practical application	Troubleshooting training capacity processing phase	Practical	Quizes+Reports
13	2	Acknowledgment and Practical application	Regulation and repair of the automatic gain	Practical	Quizes+Reports

			control and channel selector circuit - IF phase repair and .regulation		
14	2	Acknowledgment and Practical application	Fixed CRT monitor and image phase malfunctions	Practical	Quizes+Reports
15	2	Acknowledgment and Practical application	Malfunctions of the synchronization pulse junction and .AFC circuit	Practical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan

- Creating appropriate curricula with the labor market
- Holding scientific seminars and conferences aimed at updating school curricula
- Follow up on scientific developments in the field of specialization

Curriculum description form

Developing the student's ability to identify errors in connecting electronic circuits, building electronic circuits, studying their properties and applications, and benefiting from them in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Electronic Circuit (2) (EOTO216)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Building practical electronic circuits and studying their properties and applications
9	curriculum outcomes and teaching, learning and evaluation methods	
	B- Cognitive objectives	
A-1	Building practical electronic circuits and studying their properties and applications	
A-2	Developing the student's ability to identify errors in connecting electronic circuits	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Electronic Circuits(2) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Subtractor circuit and arithmetic equations for subtracting input voltage VO = V2-V1 - applied circuit	Practical+Theoretical	Quizes+Reports
2+3	4	Acknowledgment and Practical application	Operations amplifier applications - the integrator circuit - deriving its equation - example - inserting a square wave into the integrator circuit and finding the output wave for it - example - inserting a pulse wave into the integrator circuit and finding the output wave - example - the effect of the voltage of the integrator - solving exercises.	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Comparator - its circuit - business idea - inserting a triangular wave into the template input and connecting the non-template input to the ground -	Practical+Theoretical	Quizes+Reports

			inserting a triangular wave into the template input and linking the non-template input to a positive reference voltage		
5	4	Acknowledgment and Practical application	Nonlinear applications of the operation amplifier - the example rectifier - the idea of using the operation amplifier in rectifying circuits - its advantages over the circuits without the operation amplifier - a comparison between the ideal and non-ideal properties of the rectifier - the half-wave ideal rectifier circuit - the idea of its work - the perfect rectifier circuit full-wave - the business idea.	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Schmidt firing pin - False shift in comparator and how to prevent it from happening - Example - Schmidt goblet circuit Drawing its switching properties - Example - introducing a random wave into a Schmidt trigger circuit and drawing output voltage - Solving exercises	Practical+Theoretical	Quizes+Reports

7	4	Acknowledgment and Practical application	Wave generators using a process amplifier - square wave generator - its circuit - derive the equation for the output wave frequency - Modulate the circuit to give a rectangular wave - an example - circuit design.	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Stable single-circuit vibrating pulse generator - business idea - waveform - derivation of the equation for output pulse width - example - design - circuit.	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Triangle wave generator - the circuit - business idea - drawing waves - deriving the equations for that - deriving the frequency equation for the output wave.	Practical+Theoretical	Quizes+Reports
10+11	4	Acknowledgment and Practical application	Analog calculator - its design - solved examples - 555 timer - its construction - diagrams for its use in vibrators - equations for calculating the pulse width	Practical+Theoretical	Quizes+Reports

			time - solved examples.		
12	4	Acknowledgment and Practical application	Effective RC Filters - Their Advantages - Properties - - HPF-LPF- (Features- properties- equations- response curves- arithmetic examples)	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Active RC Filters - - BSFBPF - Advantages - Features - - (Features - properties - equations - response curves - arithmetic examples	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	Basic Methods for Manufacturing Integrated Circuits (Single-crystal-Thin- and Thick-Film)	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Manufacturing an integrated circuit for NPN transistor - Manufacturing integrated resistors and capacitors - Manufacturing an integrated circuit for a simple electronic circuit.	Practical+Theoretical	Quizes+Reports

11	Infrastructures	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Training the student to use microcomputer keys, write and implement programs in machine language, and methods for applying them in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Microcomputers (2) (EOTO217)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Using microcomputer keys and writing and executing programs in machine language
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Training the student to use microcomputer keys and write and implement programs in machine language	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Microcomputers (2) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	A group of branching notices and their types - conditional and unconditional and their reliance on flags - practical examples - the importance of this group in writing programs.	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	A group of control instructions - their relation to the operation keys - of what differs from the rest of the previous .instructions	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Programs to perform arithmetic operations: addition - subtraction - multiplication - division - intended addressing and its types in the 8085 processor	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Stages of executing a command - Instructing cycle - Machine cycle - The timing diagram for executing a command (instructing the contents of the accumulator to be stored in a memory location for example) - How the microprocessor reads data in memory	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Creating repetition loops - time delay loops - one loop - two loops - three loops - application programs for each.	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Generating pulses at a required frequency and known duty cycle compared to pulse generators using integrated circuits.	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment	Practical examples	Practical+Theoretical	Quizes+Reports

		and Practical application	showing how to exploit time delay loops in the industrial and household domains.		
8	4	Acknowledgment and Practical application	Writing a program for an ascending counter - with a practical example.	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Writing a countdown timer program - with a practical example	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Writing an ascending/descending counter program - with an example application.	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	microprocessor - 8086 specifications - architecture - edge plan.	Practical+Theoretical	Quizes+Reports
12	4	Acknowledgment and Practical application	Types of addressing for the 8086 microprocessor - data transfer instructions - multiplication and division instructions - examples of no other instructions.	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Comparison of an eight-ranked microprocessor (such as the 8085) and a 16-ranked microprocessor (such as the 8086).	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	-order 32 microprocessors, the most prominent of which are their characteristics - the microprocessors used in the Pentium calculators.	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	A general review of the curriculum vocabulary	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student the types of devices used for continuous and alternating electrical measurements and solving problems at the work site

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Measurements Devices (2) (EOTO218)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Study the types of devices used for continuous and alternating electrical measurements and solve problems at the work site
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Interested in studying the types of devices used for continuous and alternating electrical measurements	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Measurements Devices (2) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Using an ohmmeter - (voltmeter) to measure the unknown resistance	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Effect of load on voltmeter measurement	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Effect of load on voltmeter measurement	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Measurement of amplitude and frequency by oscilloscope	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	Constant voltage measurement by plotting	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Use a signal generator with an oscilloscope	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Design and analysis of the main circuit of the signal generator	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Maxoy bridge for alternating current, unknown resistance and inductance	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	An alternating current bridge for measuring an unknown capacitive capacitance	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	A bridge of alternating current to measure the unknown frequency	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment	Winn gantry of	Practical+Theoretical	Quizes+Reports

		and Practical application	alternating current to measure unknown capacitance		
12	4	Acknowledgment and Practical application	Gantry of alternating current to measure inductance	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Measurement of phase angle using lysagos shapes	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	thermocouple	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	thermistor resistance	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan

- Creating appropriate curricula with the labor market
- Holding scientific seminars and conferences aimed at updating school curricula
- Follow up on scientific developments in the field of specialization

Curriculum description form

Providing the student with information about radio systems and structures and studying the types of transmitters, receivers and wired and wireless communications and benefiting from them in the work site

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Communication (2) (EOTO219)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	4 hours per week (60 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Studying the types of transmitters, receivers, and wired and wireless communications and the ability to benefit from them in the field of work
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Providing the student with information about radio systems and structures and studying the types of transmitters, receivers and wired and wireless communications	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Communication(2) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	4	Acknowledgment and Practical application	Digital modulation PSK-.FSK-ASK	Practical+Theoretical	Quizes+Reports
2	4	Acknowledgment and Practical application	Transmission information and system capacity-error (SNR) signal-to-noise ratio	Practical+Theoretical	Quizes+Reports
3	4	Acknowledgment and Practical application	Cell phones - Frequencies used - Techniques used (FDMA) - (TDMA) - .(CDMA)	Practical+Theoretical	Quizes+Reports
4	4	Acknowledgment and Practical application	Teleprinters - radio .telegraph transmitters	Practical+Theoretical	Quizes+Reports
5	4	Acknowledgment and Practical application	(FaximileTransmission) - (Fas-Receiver) - (Telex)	Practical+Theoretical	Quizes+Reports
6	4	Acknowledgment and Practical application	Optical fibers - types - characteristics - sending .and receiving	Practical+Theoretical	Quizes+Reports
7	4	Acknowledgment and Practical application	Types of antennas - basics of antennas - .antenna parameters	Practical+Theoretical	Quizes+Reports
8	4	Acknowledgment and Practical application	Spread of radio waves (terrestrial - celestial - waves .Line of sight	Practical+Theoretical	Quizes+Reports
9	4	Acknowledgment and Practical application	Vertical antennas - Fright rod antennas - UHF antennas are micro .and horn antennas	Practical+Theoretical	Quizes+Reports
10	4	Acknowledgment and Practical application	Use of microwaves in .communications	Practical+Theoretical	Quizes+Reports
11	4	Acknowledgment and Practical application	Satellite Communications - Features and Characteristics - Transmission and	Practical+Theoretical	Quizes+Reports

			Receive - Earth Stations - Satellite Orbits - .Multiple Access		
12	4	Acknowledgment and Practical application	Microwaves - Generation - Frequency .Spectrum	Practical+Theoretical	Quizes+Reports
13	4	Acknowledgment and Practical application	Mobile - Introduction - Technologies used - The most important considerations in transmission - Shadow - Interference - Noise. - Transferring signals wirelessly - wirelessly (and wirelessly - wired)	Practical+Theoretical	Quizes+Reports
14	4	Acknowledgment and Practical application	GSM networks; Functions and structural	Practical+Theoretical	Quizes+Reports
15	4	Acknowledgment and Practical application	Thuraya - Thuraya services - Thuraya features - SMS - Thuraya uses - Geographical areas for network service .coverage	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization	

Curriculum description form

Teaching the student skills in the field of maintenance on electrical appliances and equipment and training him with practical experiences on diagnosing faults and benefiting from them in his field of work

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Electronic instrumentation maintenance workshop (2) (EOTO220)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Using skills in the field of maintenance on electrical appliances and equipment, diagnosing faults and benefiting from them in the field of work
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Providing the student with skills in the field of maintenance on electrical appliances and equipment and training them with practical experiences in diagnosing faults	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Electronic instrumentation maintenance workshop (2) Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1+2	2	Acknowledgment and Practical application	Malfunctions of the horizontal deflection stage and its frequency regulation - High pressure faults - Malfunctions of the vertical deflection stage and its frequency .regulation	Practical	Quizes+Reports
3	2	Acknowledgment and Practical application	Fixing audio stage malfunctions - FM detector malfunctions - Audio frequency power amplifier malfunctions	Practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Training on fixing general black and white TV faults	Practical	Quizes+Reports
5	2	Acknowledgment and Practical application	Training on fixing general black and white TV faults	Practical	Quizes+Reports
6	2	Acknowledgment and Practical application	Students will be tested with general exercises on repairing a black and white television set	Practical	Quizes+Reports
7	2	Acknowledgment and Practical application	Track and read color TV map - Locate components - Determine the difference between color TV and regular	Practical	Quizes+Reports
8	2	Acknowledgment and Practical application	Training on the means of controlling and controlling color TV - adjusting and .organizing colors	Practical	Quizes+Reports
9	2	Acknowledgment and Practical application	Malfunctions in the power supply stage of color TV - malfunctions of touch control .circuits	Practical	Quizes+Reports
10	2	Acknowledgment	Fixed malfunctions	Practical	Quizes+Reports

		and Practical application	of the channel selector - inter-frequency - detector - and automatic gain controller for .color TV		
11	2	Acknowledgment and Practical application	Fix RGB color zoom stage and color screen LED - check the three screen launchers	Practical	Quizes+Reports
12	2	Acknowledgment and Practical application	Make the necessary arrangements for all stages of the device after completing the repair	Practical	Quizes+Reports
13	2	Acknowledgment and Practical application	Examining students with general troubleshooting exercises for color TV	Practical	Quizes+Reports
14	2	Acknowledgment and Practical application	An exercise on the operation and control of the VCD device - regulation by remote control and storage in a modern TV	Practical	Quizes+Reports
15	2	Acknowledgment and Practical application	Exercises to check and measure the processing stages of VCD devices - and the most common malfunctions in .them	Practical	Quizes+Reports

11	Infrastructuree	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
•	Creating appropriate curricula with the labor market
•	Holding scientific seminars and conferences aimed at updating school curricula
•	Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student how to deal with his group of students in order to support group work and draw maps and develop designs for the project

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Project (EOTO221)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	2 hours per week (30 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	The student learns how to work collaboratively, draw maps, develop project designs, and follow up on the progress of work on the project
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Defines salient project objectives. He learns how to deal with his group of students in order to support group work, draw maps and develop designs for the project	
A-2	Follows the progress of work on the project in terms of time and learns to write the final report	
	B - The program's marathi goals	
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Project Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	2	Acknowledgment and Practical application	Discuss the projects that are tested and determine the method and plan of action.	Practical	Quizes+Reports
2	2	Acknowledgment and Practical application	Defining and allocating responsibilities and setting a schedule for implementing the project.	Practical	Quizes+Reports
3	2	Acknowledgment and Practical application	Preparing drawings and operating cards for the various mechanics laboratories of the project parts.	Practical	Quizes+Reports
4	2	Acknowledgment and Practical application	Implementation of the project in the laboratories units and preparing reports for the stages that have been reached with the weekly follow-up of the workflow of production rates and operating obstacles.	Practical	Quizes+Reports
5-6	2	Acknowledgment and Practical application	Discussing students with a committee and evaluating implementation plans for the better (and it is considered evaluated at the end of the first semester).	Practical	Quizes+Reports
7-8	2	Acknowledgment and Practical application	Resumption of the implementation of the project paragraphs and completion of the practical side	Practical	Quizes+Reports
9-10-11	2	Acknowledgment and Practical application	Discussing the project details and directing students to prepare the final report (the second semester evaluation is considered).	Practical	Quizes+Reports
12-13	2	Acknowledgment and Practical application	Completion of the project, with both theoretical and practical aspects, and preparation for final discussion	Practical	Quizes+Reports
15–14	2	Acknowledgment and Practical application	Final discussion of the project	Practical (Power point, Lecture)	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student the basic concepts of various control systems, operating the devices and machines used in them, dealing with the control system in factories, and harnessing it in the field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Control systems (EOTO222)**
4	Available attendance forms	Mandatory
5	Semester/year	First trimester (15 weeks))\Second Level
6	Number of study hours (total)	3 hours per week (45 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Teaching basic concepts about various control systems, operating the devices and machines used in them, and dealing with the control system in factories
9	curriculum outcomes and teaching, learning and evaluation methods	
A-Cognitive objectives		
A-1	Distinguishing between different control systems, operating the devices and machines used in them, and dealing with the control system in factories	
A-2	Qualifying the graduate scientifically in the field of electrical engineering by introducing the basic scientific concepts related to engineering and harnessing them in this field	
B - The program's marathi goals		
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
Teaching and learning methods ((Theoretical lectures/discussions))		
Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures / practical lectures))		
Evaluation methods ((Oral exams / written exams / observation / student cumulative record))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Control systems Second level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	3	Acknowledgment and Practical application	Introduction to control systems	Practical+Theoretical	Quizes+Reports
2	3	Acknowledgment and Practical application	Open-circuit and closed-circuit control systems	Practical+Theoretical	Quizes+Reports
3	3	Acknowledgment and Practical application	Converting electrical signals into mechanical and vice versa, converting electrical signals into pneumatic and vice versa.	Practical+Theoretical	Quizes+Reports
4	3	Acknowledgment and Practical application	Error sensing devices used in control, their types	Practical+Theoretical	Quizes+Reports
5	3	Acknowledgment and Practical application	Electrical components to control electric motors - picker - timer - push switches - specific switches.	Practical+Theoretical	Quizes+Reports
6	3	Acknowledgment and Practical application	The four variables (temperature - pressure - flow - level measurement) in control systems	Practical+Theoretical	Quizes+Reports
7	3	Acknowledgment and Practical application	Controlling the operation and shutdown of a single phase induction motor using 1- B-Thyrostor-Triac electromagnetic receiver)	Practical+Theoretical	Quizes+Reports
8	3	Acknowledgment and Practical application	Complement the applied systems	Practical+Theoretical	Quizes+Reports
9	3	Acknowledgment and Practical application	Digital systems in control	Practical+Theoretical	Quizes+Reports
10	3	Acknowledgment and Practical application	Methods for measuring temperature, pressure, flow and level	Practical+Theoretical	Quizes+Reports
11	3	Acknowledgment and Practical	The different elements of pneumatic control	Practical+Theoretical	Quizes+Reports

		application	systems		
12	3	Acknowledgment and Practical application	Systems applied in pneumatic control	Practical+Theoretical	Quizes+Reports
13	3	Acknowledgment and Practical application	Use the analog calculator to control	Practical+Theoretical	Quizes+Reports
14	3	Acknowledgment and Practical application	How to represent digital circuits in control	Practical+Theoretical	Quizes+Reports
15	3	Acknowledgment and Practical application	Using the electronic calculator in application control systems.	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Introducing the student to the components of a programmable controller and how to program them, and learning about programmable digital controllers and benefiting from them in his field of specialization

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Programmable logic controller (PLC) (EOTO223)**
4	Available attendance forms	Mandatory
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	3 hours per week (45 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Learn about programmable digital controllers and how to program them
9	curriculum outcomes and teaching, learning and evaluation methods	
	A- Cognitive objectives	
A-1	Introducing the student to the components of the software controller and how to program them	
A-2	Learn about programmable digital controllers	
	B - The program's marathi goals	
B-1	Ability to manage work	
B-2	The ability to solve problems at the work site that are necessary in this field	
	Teaching and learning methods ((Theoretical lectures/discussions))	
	Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))	
	C - emotional and value goals	
C-1	Carry out duties on the job site fairly and with a professional motive	
	Teaching methods ((Theoretical lectures / practical lectures))	
	Evaluation methods ((Oral exams / written exams / observation / student cumulative record))	
	D- General and qualifying transferred skills (other skills related to employability and personal development)	
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Programmable logic controller (PLC) Second level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	3	Acknowledgment and Practical application	Introduction	Practical+Theoretical	Quizes+Reports
2+3	3	Acknowledgment and Practical application	Sensors with programmable controller(heat, pressure,motion ..etc)	Practical+Theoretical	Quizes+Reports
4	3	Acknowledgment and Practical application	Electrical switch, electrical contact	Practical+Theoretical	Quizes+Reports
5	3	Acknowledgment and Practical application	Introduction of ladder language	Practical+Theoretical	Quizes+Reports
6	3	Acknowledgment and Practical application	Logic ciruit (AND,OR,NOT,etc.) using ladder language	Practical+Theoretical	Quizes+Reports
7	3	Acknowledgment and Practical application	Timers and its types-simulation using ladder language	Practical+Theoretical	Quizes+Reports
8	3	Acknowledgment and Practical application	The signal in ladder language	Practical+Theoretical	Quizes+Reports
9	3	Acknowledgment and Practical application	Digital counter in ladder language with examples.	Practical+Theoretical	Quizes+Reports
10	3	Acknowledgment and Practical application	Example of (changeover circuit) using ladder language	Practical+Theoretical	Quizes+Reports
11	3	Acknowledgment and Practical application	Example of traffic light	Practical+Theoretical	Quizes+Reports
12	3	Acknowledgment and Practical application	Application example for open and close the door using motion sensor.	Practical+Theoretical	Quizes+Reports
13	3	Acknowledgment and Practical application	Operating circuit of single phase motor by swith (motor starter) using ladder language.	Practical+Theoretical	Quizes+Reports
14	3	Acknowledgment and Practical application	Operating circuit of three phase motor(delta-star)	Practical+Theoretical	Quizes+Reports
15	3	Acknowledgment and Practical application	Application example for electrical lift	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization	

Curriculum description form

Expanding the student's knowledge by learning about new sources of energy other than traditional sources. The primary goal of the course lies in the importance of renewable energy and its applications, which has become one of the most important areas proposed for benefiting from it and obtaining renewable (sustainable) and clean energy as a guarantee for the present and security for the future

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Renewable energy systems (EOTO224)**
4	Available attendance forms	Optional
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	3 hours per week (45 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Knowing the basics of various renewable energy sources and the necessary technologies for associated energy systems
9	curriculum outcomes and teaching, learning and evaluation methods	
A-Cognitive objectives		
A-1	The ability to apply knowledge in the field of renewable energies and keep pace with the prospects of its rapid development	
A-2	The ability to identify, formulate and find engineering solutions to problems and dilemmas related to various renewable energy systems in an engineering manner	
B - The program's marathi goals		
B-1	The ability to conduct experiments, analyze and interpret results in the field of engineering work according to the required standards	
B-2	The ability to solve problems at the work site that are necessary in this field	
Teaching and learning methods ((Theoretical lectures/discussions))		
Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures / practical lectures))		
Evaluation methods ((Oral exams / written exams / observation / student cumulative record))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Renewable energy systems Second level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	3	Theoretical lectures Practical – application Discussions and – workshops. Using modern – presentation and teaching methods Field visits and systematic training Access to the latest research Self-education– Following – websites	General introduction to renewable energy - renewable energy sources and their applications - renewable energy and environmental problems The sun - time calculation (time equation and longitude correction).	Practical+Theoretical	Quizes+Reports
2	3	Acknowledgment and Practical application	Solar angles (declination - hour angle - solar azimuth angle - sunrise and sunset times and length of the day - angle of incidence) solar radiation in space - terrestrial radiation - total radiation on inclined surfaces	Practical+Theoretical	Quizes+Reports
3	3	Acknowledgment and Practical application	Solar water heating systems - thermosiphon system - solar collector with connected tank	Practical+Theoretical	Quizes+Reports
4	3	Acknowledgment and Practical application	Direct circulation system - indirect water heating system - tank heating system	Practical+Theoretical	Quizes+Reports
5	3	Acknowledgment and Practical application	Heat storage systems (air heat tank system - liquid heat tank system - thermal analyzes of storage systems)	Practical+Theoretical	Quizes+Reports
6	3	Acknowledgment and Practical	The amount of hot water required - practical	Practical+Theoretical	Quizes+Reports

		application	requirements (pipes - fasteners - insulators - pumps - valves - other devices)		
7	3	Acknowledgment and Practical application	Solar cells – components of a PV electrical generation system	Practical+Theoretical	Quizes+Reports
8	3	Acknowledgment and Practical application	PV system design PV/T hybrid system	Practical+Theoretical	Quizes+Reports
9	3	Acknowledgment and Practical application	Solar thermal electricity generation systems (parabolic trough collectors - tower energy systems)	Practical+Theoretical	Quizes+Reports
10	3	Acknowledgment and Practical application	Introduction to wind energy - the energy available in the wind - the torque and energy of wind turbines	Practical+Theoretical	Quizes+Reports
11	3	Acknowledgment and Practical application	Wind energy conversion systems - wind generators (rotating tower - power regulators - stop systems - generator)	Practical+Theoretical	Quizes+Reports
12	3	Acknowledgment and Practical application	Performance of air energy conversion systems - power curve for the wind turbine - capacity factor	Practical+Theoretical	Quizes+Reports
13	3	Acknowledgment and Practical application	Introduction to the water cycle - water turbines	Practical+Theoretical	Quizes+Reports
14	3	Acknowledgment and Practical application	Introduction to underground energy - underground power stations (thermal plants - electrical stations) underground heat pumping system	Practical+Theoretical	Quizes+Reports
15	3	Acknowledgment and Practical application	Tidal energy - tidal stations Wave energy - wave energy stations	Practical+Theoretical	Quizes+Reports

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan
	• Creating appropriate curricula with the labor market • Holding scientific seminars and conferences aimed at updating school curricula • Follow up on scientific developments in the field of specialization

Curriculum description form

Teaching the student to deal with modern laboratories and equipment, including learning to use simulation programs

1	Educational institution	Northern Technical University / Technical Institute AL-Dour
2	Scientific department/center	Electronic techniques
3	curriculum name and code	**Computer applications (EOTO225)**
4	Available attendance forms	Optional
5	Semester/year	Second trimester (15 weeks))\Second Level
6	Number of study hours (total)	3 hours per week (45 hours)
7	Date the description was prepared	22/1/2025
8	curriculum objectives	Dealing with modern laboratories and equipment, including learning to use simulation programs
9	curriculum outcomes and teaching, learning and evaluation methods	
A-Cognitive objectives		
A-1	Preparing qualified graduates to deal with modern laboratories and equipment, including learning to use simulation programs	
A-2	Preparing students to pass professional tests from local and foreign bodies	
B - The program's marathi goals		
B-1	Ability to manage projects	
B-2	The ability to solve problems at the work site that are necessary in this field	
Teaching and learning methods ((Theoretical lectures/discussions))		
Evaluation methods ((Oral exams/written exams/weekly reports/daily attendance/semester and final exams))		
C - emotional and value goals		
C-1	Carry out duties on the job site fairly and with a professional motive	
Teaching methods ((Theoretical lectures / practical lectures))		
Evaluation methods ((Oral exams / written exams / observation / student cumulative record))		
D- General and qualifying transferred skills (other skills related to employability and personal development)		
D-1	Improve their discussion skills	
D-2	Raising their research awareness and moving students from the teaching stage to learning	

10. Curriculum structure

Computer applications — Second Level

Week	hours	Learning Outcomes	Unit/module or topic title	Teaching method	Assessment Method
1	3	Acknowledgment and Practical application	Learn about Matlab and its most important versions, and get acquainted with the program's interface and basic operations	Practical+Theoretical	Quizes+Reports
2	3	Acknowledgment and Practical application	Understanding the commands of Matlab	Practical+Theoretical	Quizes+Reports
3+4	3	Acknowledgment and Practical application	Learn how to create an m.file, arrays, vectors, and operations on them	Practical+Theoretical	Quizes+Reports
5+6	3	Acknowledgment and Practical application	Identify logical expressions in Matlab and add properties to the drawing within the program	Practical+Theoretical	Quizes+Reports
7	3	Acknowledgment and Practical application	D (2-2 Dimensional)	Practical+Theoretical	Quizes+Reports
8+9	3	Acknowledgment and Practical application	Recognizing the Loops	Practical+Theoretical	Quizes+Reports
10	3	Acknowledgment and Practical application	Introduction to simulation in Matlab	Practical+Theoretical	Quizes+Reports
11	3	Acknowledgment and Practical application	Matlab application in electronic circuits	Practical+Theoretical	Quizes+Reports
12	3	Acknowledgment and Practical application	Matlab application in analog communication - AM type	Practical+Theoretical	Quizes+Reports
13	3	Acknowledgment and Practical application	Matlab application in analog communication - FM type	Practical+Theoretical	Quizes+Reports
14	3	Acknowledgment and Practical application	Matlab application in digital communications - type ASK	Practical+Theoretical	Quizes+Reports
15	3	Acknowledgment	Matlab	Practical+Theoretical	Quizes+Reports

		and Practical application	application in digital communication - FSK and PSK		

11	Infrastructure	
*	The required textbooks	are available in the department and the institute library free of charge
*	The main references (main)	are available in the free section and the institute library.
*	electronic references, websites	The Internet

12	Curriculum development plan

- Creating appropriate curricula with the labor market
- Holding scientific seminars and conferences aimed at updating school curricula
- Follow up on scientific developments in the field of specialization