Republic of Iraq
Ministry of higher education & scientific research Supervision and scientific evaluation directorate

Quality assurance and academic accreditation

Academic program specification form for the academic

University: Northern Technical University

College: Eng. Technical College/ Mosul

Department: Medical Instrumentation Techniques Engineering

Date of form completion: 6/1/2024

Dean's name	Dean's assistant for scientific affairs	Head of the Department
Majid Najim Khalel	**Mohammed S. Jarjees**	**Zaid Husham Dahham**
Date:	Date:	Date:
Signature:	Signature:	Signature

Quality Assurance and University performance manager

Name: Nour Kahtan

Date:

Signature

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFOMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

The Medical Instrument Engineering Technology program specifications outline the knowledge and skills required to work in the field of installation, calibration and maintenance of medical devices. This program focuses on developing technical expertise in the medical device sector, new medical technologies, hospital management, and medical device maintenance. The program usually consists of classroom lectures, practical training and on-the-ground work.

In addition, the program focuses on developing technical skills such as electrical circuit design, computer-aided design, microcontroller programming, estimation, and medical project management. The program aims to provide graduates with the necessary skills to work as medical device engineers, medical engineering team leaders, medical device inspectors, cost estimators, and other technical positions in the field of medical engineering.

1.Teaching Institution	Northern Technical University/ Eng. Technical College/ Mosul
2.University Department/Centre	Medical Instrumentation Techniques Engineering
3.Programme Title	Bachelor's degree in Eng. Technical College/ Mosul - Department of Applied Mechanics Techniques Engineering
4.Title of Final Award	Bachelor's degree in Eng. Technical College/ Mosul - Department of Medical Instrumentation Techniques Engineering
5.Modes of Attendance offered	Bologna/ Semesters
6.Accreditation	Ministry of Higher Education Scientific Research
7.Other external influences	Non
8.Date of production of this specification	6/1/2024

9.Aims of the Program

Medical instrument technology engineering is one of the modern specializations concerned with the design, development and maintenance of medical devices and equipment used in the field of health care for diagnosis, treatment, monitoring and analysis. It is one of the most important departments that provides technical assistance to medical institutions and healthcare facilities. The general objectives of the department are:

1. Conduct scientific research in biomedical fields, with a focus on applied research, to keep pace with the rapid development of science and technology.
2. Continuous communication with graduates contributes to their ongoing development and provides input to develop the department’s curricula in response to the needs of the labor market.
3. Design and develop modern medical devices that enhance the quality of patient care and facilitate optimal diagnosis and treatment.
4. Design and develop modern medical devices and tools that help improve the quality of health care and provide optimal diagnosis and treatment for patients.
5. Training and qualifying medical technicians and providing them with the necessary skills and knowledge to handle, maintain, and operate properly modern medical devices.

1. 6. Cooperating with doctors and health institutions to provide the necessary technical support to operate medical devices correctly and effectively.

10.Learning Outcomes, Teaching, Learning and Assessment Methods

The Medical Instrument Technology Engineering program's unique educational goals impact the learning outcomes of its students. Student learning outcomes in the program are as follows:

1. Knowledge of medical materials and methods: Students should be able to demonstrate a solid understanding of medical materials and methods, including their properties, advantages, and limitations.
2. Medical Device Knowledge: Students should be able to demonstrate a solid understanding of the use, calibration and maintenance of medical devices.
3. Ability to read and interpret technical drawings: Students must be able to read and interpret service catalogs and technical drawings, including mounts, sections, and details.
4. Communication and Teamwork: Students must be able to communicate effectively with medical personnel, clients, patients, and users of medical devices, as well as work collaboratively in a team environment.
5. Safety: Students should be aware of safety in healthcare sectors, such as the dangers of high electrical voltage, potential hazards at the work site, such as handling patients, the spread of viruses, and the dangers of some medical devices such as radiation devices.

B. Subject-specific skills

1. Perform mathematical calculations and design mechanical components.
2. Conduct non-destructive analyses and inspections for mechanical components.
3. Conduct experiments and perform failure tests for components.

Teaching and learning Methods

Summer and professional training, laboratories, scientific films, and videos (online and in-person), integrated learning, and graduation projects.

Assessment method

Daily , Monthly , Final examination and weekly reports

C. Thinking Skills

1. The department aims to graduate students capable of simulating the job market with initial knowledge and skills.
2. Design and implement installation maps for modern devices.
3. Install and operate devices and machines based on correct principles in line with the vision of designing and manufacturing companies.
4. Contribute to and supervise the maintenance of various devices and units.
5. Research, develop, and find alternative parts for units that may experience faults.
6. Work according to the methodology of preventive maintenance and systematically activate its mechanisms.

Teaching and Learning Methods

Summer and professional training, laboratories, scientific films, and videos (online and in-person), integrated learning, and graduation projects.

Assessment methods

Daily , Monthly , Final examination and weekly reports

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

1. Teamwork skills.
2. Computer and internet skills.
3. Communication skills, including English language and presentation.
4. Leadership skills and responsibility.
5. Self-learning and lifelong learning skills.

Teaching and Learning Methods

Summer and professional training, laboratories, scientific films, and videos (online and in-person), integrated learning, and graduation projects.

Assessment Methods

Daily , Monthly , Final examination and weekly reports

11. Program Structure

12. Awards and Credits

Level/Year	Course or Module Code	Course or Module Title	Credit rating	
Non	Non	Non	Non	**Bachelor Degree Requires (x) credits**
1st	Morning Section Evening Section	1st Stage - Morning 1st Stage - Evening	750 750	
2nd	Morning Section Evening Section	2nd Stage - Morning 2nd Stage - Evening	750 750	
3rd	Morning Section Evening Section	3rd Stage - Morning 3rd Stage - Evening	750 750	
4th	Morning Section	4th Stage - Morning	750	

13.Personal Development Planning

1. Self-learning
2. Scientific seminars and symposium
3. Scientific researching and publishing papers
4. Trainee courses outside and inside the country

14.Admission criteria

- High school section
- Occupational school
- The average degree

15. Key sources of information about the program

1. Book and textbook
2. Scientific catalogues
3. Scientific research and publishing paper
4. Internet

Curriculum Skills Map																			
Please tick in the relevant boxes where individual Program Learning Outcomes are being assessed																			
Program Learning Outcomes																			
Year/ level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
First	NTU100	Democracy and Human Rights	Fundamental	B		T	T			B	L	T	P		L	L			P
	NTU101	English Language	Accessory	T			T			P			R		R		T		R
Second	MIE204	Mathematics	Fundamental	T	L	B	L				T		P				P		R
	MIE204	Anatomy and physiology	Accessory	T	B	P									T		L		B
Third	MIE301	Medical instrumentation	Fundamental	T	B		S				R		L					T	
	MIE306	Computer application	Accessory	T	P		B				P				T			P	J
Forth	MIE404	Research Methodology	Fundamental	T	L		B				L							T	J
	MIE403	Digital image processing	Accessory	T	L	B													

B/ Book T/ Theory P/Practical R/Report S/Seminar L/Lab. J/Project

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW:PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provide a concise summary of the main features course and the learning outcomes that a typical student might reasonable expected to achieve and demonstrate if he/she take advantage of the learning opportunities that are provided. It should be cross-referenced with the specification

1.Teaching Institution	Ministry of higher education & scientific research Northern Technical University/ Eng. Technical College/ Mosul
2.University Department/Center	Applied Mechanics Techniques Engineering
3.Course title/code	
TEMO 100	Engineering Mathematics
4.Programme (s) to which it contributes : 2 lecture/ week	
5. Modes of Attendance offered	
6. Semester/Year	2024-2023
7. Number of hours tuition(total) = :750 hr.	
8.Date of production/revision of this specification	6/1/2024
9. Aims of the Course	
After studying the basic subjects in the previous stage, it is now time to introduce more specialized topics in this advanced stage in order to teach advanced subjects in mathematics such as functions of multiple variables, integrals, multiple transformations, and series, in addition to some other topics that have an impact on the study of the engineering specialization.	

10. Learning Outcomes , Teaching, Learning and Assessment Methods

1. Learn how mathematics is used in the tutorial.
2. List the various mathematical symbols associated with the curriculum.
3. Summarize what is meant by the functions of several variables
4. Summarize what is meant by the partial derivative
5. Summarize what is meant by sequence and series
6. Discuss sequence and sequence on how to test for convergence and divergence.
7. Describe differential equations. Laplace transform.
8. Determine the method for solving differential equations.

Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment methods

Daily , Monthly , Final examination and weekly reports

C. Thinking Skills

1. The department aims to graduate students capable of simulating the job market with initial knowledge and skills.
2. Design and implement installation maps for modern devices.
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Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment methods

Daily , Monthly , Final examination and weekly reports

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

D1. Team work skills
D2. Computing and Internet skills
D3. English Lagrange skills
D4. Leadership and taking the responsibility skills
D5. Self-learning and lifelong learning

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
Non	Non	Non	Non	Non	Non
Monday	8:30-10:30		Mathematics	Projection device and board	Assignments and exams
Wednesday	8:30-10:30		Mathematics	Projection device and board	Assignments and exams

12. Infrastructure	
Required reading: - CORE TEXTS - COURSE MATERIALS - OTHER	Non
Special requirements (include for example workshops, periodicals, IT software, websites)	workshops
Community-based facilities (include for example, quest, lectures, internship, field studies)	Summer training , quits lechers

13. Admissions	
Per-requisites	High School section , outstanding student in the institute
Minimum number of students	10
Maximum number of students	40