

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

2024

Introduction:

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

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

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

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

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate

description of the targeted learning outcomes according to specific learning strategies.

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

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

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

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

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

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

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

Academic Program Description Form

University Name: ..Al Mustaqbal University.....

Faculty/Institute: ...College of Health and Medical.....

Scientific Department: ..Radiological Techniques Medical

Department.....

Academic or Professional Program Name: Radiology Technologist.....

Final Certificate Name: .Radiology Techniques.....

Academic System: Combined quarterly (courses)

Description Preparation Date: 1/10/2023

File Completion Date: 28/4/2024

Signature:

Head of Department Name:

Prof.Dr.Raad Shaker Alnayli

Signature:

Scientific Associate Name:

Date:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision

A distinguished department in teaching radiological technology and medical

imaging, and supportive of the process of development, research and development, contributing to building a healthy society.

2. Program Mission

Qualifying local competencies capable of meeting the needs of the labor market in various fields of radiology and medical imaging techniques, with a focus on professional ethics, achieving safety and quality conditions, and providing research and consulting services to the local community.

3. Program Objectives

The Department of Radiology Technologies at Future University seeks to achieve a number of goals to develop and develop the field of radiology services, through:

- 1- Graduating qualified specialists with the knowledge and skills that enable them to deal efficiently with radiology and medical imaging equipment and perform various types of radiological examinations.
- 2- Training students on how to deal with various pathological cases within the radiology department, methods of caring for them, and justifying radiation exposure to them.
- 3- Preparing students with the professional and administrative ethical foundations and imaging quality in the Radiology Department.
- 4- Educating students and informing them of the dangers of radiation exposure and how to protect workers and patients from these dangers.
- 5- Developing students' educational, research and creativity skills.
- 6- Providing the appropriate environment and capabilities necessary to enable faculty members to increase their ability and develop their academic skills to ensure the quality of educational outcomes.
- 7- Encouraging faculty members to contribute actively to scientific research and academic studies.

8– Benefiting from the academic and professional expertise of faculty members in serving the university and contributing to solving some of the problems facing society in their field of specialization.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

no

5. Other external influences

Is there a sponsor for the program?

no

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				
Department Requirements				
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1 st year – 2 nd Course	MU0522205	Physics of Computed Tomography	2	3

8. Expected learning outcomes of the program

Knowledge

- A1- Describe and explain the basic physics of ray projection.
2. Describe the method of obtaining scan segments, the step and general characteristics of the data sets
Production.
 3. Describe the helical/spiral volume acquisition method and general characteristics of the data set
Production.
 4. Describe and explain the general concept of the back projection method for image reconstruction.
 5. Explain reconstruction methods
 6. Explain the concept of voxels that are formed during image reconstruction.
 7. Describe and illustrate the general range of CT numbers for tissues and materials in the human body.
 8. Explain how windows contribute to high contrast sensitivity.

Skills

- B1 Skills objectives for the course.
- B1 - Deepening the understanding of the theoretical material by conducting experiments related to this theoretical material
- B2 - Developing modern theoretical concepts through evidentiary experiments conducted by the student himself
- B3 - Developing students' experimental skills and deepening the spirit of research and discovery
- B4- Identify and maintain all laboratory equipment

Ethics & Emotional

- 1) - Working within one team and spreading the spirit of cooperation
- 2) 2- Urging students to deal ethically with each other on campus.

- 3) 3- Maintaining and maintaining laboratory equipment and machines.
- 4) 4-Attention to personal safety and patient safety
- 5) 5- Preserving laboratories from fires.

Learning Outcomes 16

9. Teaching and Learning Strategies

- ✓ 1- Theoretical and practical lectures
- ✓ 2- Curricular and extracurricular activities
- ✓ 3- Applied practices during practical and field training
- ✓ 4- Graduation projects for students

10. Evaluation methods

- 1) 1- Oral exams
- 2) 2- Practical tests
- 3) 3- Quarterly exams
- 4) 4- Daily evaluation
- 5) 5- -Final exams
- 6) Reports

11. Faculty

Faculty Members

Academic Rank	Specialization	Special Requirements/Skills	Number of the teaching staff
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			(if applicable)			
	General	Special			Staff	Lecturer

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

Program Skills Outline

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2023-2024	MU0522205	Physics of Computed Tomography	basis												

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- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:	
Physics of Computed Tomography	
2. Course Code:	
MU0522205	
3. Semester / Year:1st year 2nd Semester	
28/4/2024	
4. Available Attendance Forms:	
5. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical +3 Practical =5; Number of units 3	
6. Course administrator's name (mention all, if more than one name)	
Prof.Dr.Raad Shaker Alnayli MS.c.Reem Taumu Yousif	
7. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1– Describe and explain the basic physics of projection. 2. Describe the step and scan slice acquisition method and general characteristics of production data sets. 3. Describe the spiral/spiral volume acquisition method and general characteristics of the production data set. 4. Describe and explain the general concept the back projection method for image reconstruction. 5. Explain reconstruction methods 6. Explain the concept of voxels that are formed during image reconstruction. 7. Describe and illustrate the general range of CT numbers for tissues and materials in the human body. 8. Explain how windows contribute to h

contrast sensitivity.

8. Teaching and Learning Strategies

Strategy	-Theoretical and practical lectures 2- Curricular and extracurricular activities 3- Applied practices during practical and field training
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9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

10. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1. M. Radhi Al-Qurayshi and Qasim. AL-Mosawi "Radiation Physics and its applications in diagnostic radiological technique Middle Technical University (MTU) Iraq, (2015).
2. W. R. Hendee and E. R. Ritencour "Medical Imaging Physics", 4th Edition, Wiley-Liss, Inc., (2002).
3. Stewart Carlyle Bushong "Radiologic Science for Technologists Physics, Biology, and Protection" Elsevier, Inc. , 7th edition, 2017.
4. Chris Guy & Dominic ffytche, "Introduction to The Principles of Medical Imaging", Imperial College Press, 2005.

	<p>5. Perry Sprawls, “Physical principles of medical imaging”, 2nd Edition 1996.</p> <p>6. Euclid Seeram, “ Computed tomography : physical principles, clinical applications, and quality control” 4th edition, Elsevier Inc. 2016.</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	