

**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 staP 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, quaJerly), 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:** .....

**Faculty/Institute:** .....

**Scientific Department:** .....

**Academic or Professional Program Name:** .....

**Final Certificate Name:** .....

**Academic System:** .....

**Description Preparation Date:**

**File Completion Date:**

**Signature:**

**Head of Department Name:**

**Date:**

**Signature:**

**Scientific Associate Name:**

**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

Program vision is written here as stated in the university's catalogue and website.

### 2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

### 3. Program Objectives

General statements describing what the program or institution intends to achieve.

### 4. Program Accreditation

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

### 5. Other external influences

Is there a sponsor for the program?

### 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

### 8. Expected learning outcomes of the program

Knowledge

Learning Outcomes 1

Learning Outcomes Statement 1

Skills

**Learning Outcomes 2**

**Learning Outcomes Statement 2**

**Learning Outcomes 3**

**Learning Outcomes Statement 3**

Ethics

**Learning Outcomes 4**

**Learning Outcomes Statement 4**

**Learning Outcomes 5**

**Learning Outcomes Statement 5**

### 9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

### 10. Evaluation methods

Implemented at all stages of the program in general.

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

<b>Professional Development</b>
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.

<b>12. Acceptance Criterion</b>
(Setting regulations related to enrollment in the college or institute, whether central admission or others)

<b>13. The most important sources of information about the program</b>
State briefly the sources of information about the program.

<b>14. Program Development Plan</b>
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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

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

## Course Description Form

<b>1. Course Name:</b>	
Fuzzy mathematics	
<b>2. Course Code:</b>	
Elective	
<b>3. Semester / Year:</b>	
Third stage, second semester	
<b>4. Description Preparation Date:</b>	
10/1/2024	
<b>5. Available Attendance Forms:</b>	
Attendance	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Prof. Dr. Nazar K. Hussein Email: <a href="mailto:nazar.dikhil@tu.edu.iq">nazar.dikhil@tu.edu.iq</a>	
<b>8. Course Objectives</b>	
<ol style="list-style-type: none"> <li>1. Introducing the student to the concepts and principles of mathematics and its applications in various fields.</li> <li>2. Develop a strong understanding of food groups, their characteristics, and how they differ from conservative cultural groups.</li> <li>3. Explore different types of mathematics.</li> <li>4. Providing practical experience in designing mathematics concepts using development tools and programming languages.</li> <li>5. Attractive to the analysis and analysis of mathematics issues in terms of accuracy, interpretability and expertise.</li> <li>6. Improve critical and problem-solving skills by applying positive mathematics techniques to search for solutions in a real world characterized by uncertainty and ambiguity.</li> </ol> <p>Encourage and discuss advanced topics in the Dawadi project, such as design controls, blur recognition, and blur recognition.</p>	<p>.....</p> <p>.....</p> <p>.....</p>
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<p>There are several strategies that can be used in the learning and teaching process of mathematical modeling. Here are some effective strategies:</p> <ol style="list-style-type: none"> <li>1. Active learning: It requires students to actively participate in the learning process. This can be achieved by asking interesting questions and mathematical challenges to stimulate curiosity and interaction.</li> </ol>

Interactive activities such as real-world applications can be organized and solved through fuzzy mathematics.

2. Practical application: Learning in fuzzy mathematics should be related to its practical applications. Real-life problems and challenges can be presented for students to solve using fuzzy mathematics. This allows students to see the value and importance of the material they are learning in everyday life.

3. Cooperative learning: Students can be encouraged to work together in small groups to solve modeling problems. They can exchange knowledge, ideas and experiences, enhance their common understanding and develop communication and collaboration skills.

Use of technology: Available technological tools and programs can be used to enhance the learning process and analyze fuzzy models.

#### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	General introduction to fuzzy mathematics	General introduction	Lectures	Discussion and tests
2	4	The difference between classical logic and fuzzy logic	General introduction	Lectures	Discussion and tests
3	4	Representation of affiliation functions	Affiliation functions	Lectures	Discussion and tests
4	4	Trigonometric function, trapezoid function, and Gaussian function	Affiliation functions	Lectures	Discussion and tests
5	4	Operations on fuzzy sets	Operations on groups	Lectures	Discussion and tests
6	4	Linguistic variables	Linguistic variables	Lectures	Discussion and tests
7	4	Characteristics of fuzzy groups	Characteristics of fuzzy groups	Lectures	Discussion and tests
8	4	Fuzzy relationship	Fuzzy relationship	Lectures	Discussion and tests
9	4	Mid-course exam	Mid-course exam	Lectures	Discussion and tests
10	4	Methods of representing fuzzy relationships	Methods of representing fuzzy relationships	Lectures	Discussion and tests
11	4	Operations on Matrices	Operations on Matrices	Lectures	Discussion and tests
12	4	Characteristics of fuzzy relationships	Characteristics of fuzzy relationships	Lectures	Discussion and tests
13	4	Installation of the relationship in pieces- $\alpha$ – cut	Installation of the relationship in pieces- $\alpha$ cut	Lectures	Discussion and tests

14	4	Principle Extension	Principle Extension	Lectures	Discussion and tests
15	4	Application to relationships	Application to relationships	Lectures	Discussion and tests

<b>11. Course Evaluation</b>	
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	
<b>12. Learning and Teaching Resouces</b>	
Required textbooks (curricular books, if any)	<p>1- Chen, G., Pham, T.T., 2000. Introduction to fuzzy sets, fuzzy logic, and fuzzy control systems. CRC press.</p> <p>2- Ross, T.J., 2005. Fuzzy logic with engineering applications. John Wiley &amp; Sons.</p>
Main references(sources)	
Reconnended books and references (scientific journals, reports,...)	<p>1- Sivanandam, S., Sumathi, S., Deepa, S., 2007. Introduction to fuzzy logic using MATLAB. Springer.</p>

Electronic references, websites	3- Chen, G., Pham, T.T., 2000. Introduction to fuzzy sets, fuzzy logic, and fuzzy control systems. CRC press. Ross, T.J., 2005. Fuzzy logic with engineering applications. John Wiley & Sons.
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