

**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.

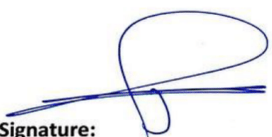
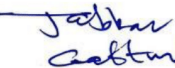
**Learning Outcomes:** A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

**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: Diyala  
Faculty/Institute: College of Engineering  
Scientific Department: Department of Electrical Power and Machines Engineering  
Academic or Professional Program Name: Bachelor  
Final Certificate Name: Bachelor of science in Electrical Power and Machines Engineering  
Academic System: Course  
Description Preparation Date: 13/8/2024  
Completion Date: 13/8/2024

Signature:   
Head of Department Name:  
Assit. prof. Dr. Balasim M. Hussein  
Date: 13/8/2024

Signature:   
Scientific Associate Name:  
Assst prof. Dr.   
Date: 13/8/2024



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

Prof. Dr. Anees A. Khaden

## Course description form

<b>1. Course Name</b>	
Microcontroller	
<b>2. Course Code</b>	
EP316	
<b>3. Semester/Year</b>	
2n'd Semester/Third Year	
<b>4. The date this description was prepared</b>	
2023 / 9 / 17	
<b>5. Available forms of attendance</b>	
Face-to-Face theoretical lectures	
<b>6. Number of study hours (total) / number of units (total)</b>	
45/2	
<b>7. Name of the course administrator</b>	
Name: Lect. Hayder Salim Hameed Email: <a href="mailto:haydersalim@uodiyala.edu.iq">haydersalim@uodiyala.edu.iq</a>	
<b>8. Course objectives</b>	
<b>Objectives of the study subject</b>	During the semester, the student learns to understand the microcontroller, its components, programming languages, applications, the main differences between it and the microprocessor, and the most important applications for both types. In addition to learning about embedded systems and the revolution they have brought about in the field of current and future technology.
<b>9. Solution of non-linear equations and root findings.</b>	
<b>The Strategy</b>	<ul style="list-style-type: none"> <li>• The student is directed to think about modern technology</li> <li>• Urging the student to think about research in the field of embedded systems.</li> </ul>

	<ul style="list-style-type: none"> <li>● Urging the student to think about programming languages used in embedded systems platforms</li> <li>● Urging the student to think about contributing by conducting some experiments and programming them using Arduino</li> <li>● Through discussion, students participate in solving some practical problems.</li> <li>● Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of the academic subjects.</li> <li>● Presenting a simple project or seminar to the student in front of his fellow students to enhance his self-confidence.</li> </ul>
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### 10. Numerical integration and differentiation.

Week	Hours	Name of the unit or topic	Required learning outcomes	Learning method	Interpolation and solving differential equations.
1	2	Microcomputer Architecture, <b>Microcomputer component:</b> Software,Hardware	Introducing the student to the components of a microcomputer	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
2	2	<b>Memory (Main Memory)</b> ,Adresses	Introducing the student to the storage unit and its address.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
3	2	<b>Types of memory</b>	Introducing the student to the types of storage units.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
4	2	<b>Microprocessor, How</b>	Introducing the	Whiteboard and	Daily, oral,

		<b>does a Microprocessor Work?</b>	student to precision therapy and how it works.	Data show	monthly, written examinations and reports
5	2	Microprocessor – Classification	Introducing the student to the classification of the microprocessor.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
6	2	8085 Microprocessor	Introducing the student to the 8085 processor.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
7	2	8085 – Addressing Modes & Interrupts 8085 – Instruction Sets,	Introducing the student to the addressing modes, interrupts, and programming of the 8085.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
8	2	Control Instructions, Logical Instructions, Branching Instructions,	Introducing the student to control commands and logical and sub-operation commands.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
9	2	Arithmetic Instructions, Data Transfer Instructions, 8085 – Demo Programs	Introducing the student to the commands of mathematical operations with examples	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
10	2	Microcontrollers , Difference between Microprocessor and Microcontroller	Introducing the student to the microcontroller and the difference between it and the microprocessor.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
11	2	8051 – Architecture	Introducing the student to the 8051 microcontroller architecture.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
12	2	8051 – Input Output Ports	Introducing the student to the input and output ports of the 8051 controller.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
13	2	8051 – Interrupts	Interrupts for the	Whiteboard and	Daily, oral,



			8051 microcontroller	Data show	monthly, written examinations and reports
14	2	<b>Introduction to address decoding,</b> Full address decoding, <b>Partial address decoding</b>	Introducing the student to an introduction to decryption and how to fully and partially encrypt.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
15	2	<b>Implementing address decoders,</b> Examples	Explain examples of implementing the encryption process	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports

## 11. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

## 12. Learning and teaching resources

Required textbooks (methodology, if any)	<b>1.Microcontroller &amp; Embeddeed Systems</b> <b>2.Microcontroller: Architecture, Programming &amp; Applecations</b>
Main references (sources)	<ul style="list-style-type: none"> <li>• Lectures presented by the subject teacher.</li> <li>• Books available in the college library</li> </ul>
Recommended supporting books and references (scientific journals, reports....)	All reputable scientific magazines and periodicals related to embedded systems and Arduino.
Electronic references, Internet sites	<a href="https://www.tutorialspoint.com">https://www.tutorialspoint.com</a>