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:
ASSL 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. Khadom

Course description form

1. Course Name	
Application Engineering Programs	
2. Course Code	
EP206	
3. Semester/Year	
2n'd Semester/Third Year	
4. The date this description was prepared	
2023 / 9 / 17	
5. Available forms of attendance	
Face-to-Face theoretical lectures	
6. Number of study hours (total) / number of units (total)	
45/2	
7. Name of the course administrator	
Name: Lect. Hayder Salim Hameed Email: haydersalim@uodiyala.edu.iq	
8. Course objectives	
Objectives of the study subject	1. Providing the student with basic information about software simulation systems. 2. Familiarity with the famous mathematical and engineering analysis software simulation system (MATLAB Simulink.). 3. The student's knowledge of a simulation system in which an integrated dynamic and programming model is designed. The modeling and simulation process is then carried out through the tool that was originally developed by MathWorks. 4. Obtaining sufficient information about the use of the program regarding the possibility of dispensing with real experiments if relying on simulation in MATLAB.

9. Solution of non-linear equations and root findings.	
The Strategy	• The student is directed in the practical laboratory and is tasked with analyzing and programming a simple engineering system or application using MATLAB Simulink, generating automatic code, testing and verifying the integrated systems, and displaying the results of the analysis and programming. • Important notes about the importance of programming using the simulation system in our lives and the extent of progress of some countries in the field of software. Important programs in our lives are also reviewed and widely used such as medical or agricultural applications and other applications programmed by engineers, analysts and programmers. • Through discussion, students participate in solving some practical problems. • Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of the academic subjects. • Presenting a seminar to the student in front of his fellow students to enhance his self-confidence.

10. Numerical integration and differentiation.					
Week	**Hours**	**Name of the unit or topic**	**Required learning outcomes**	**Learning method**	Interpolation and solving differential equations.

1	3	Introduction, What is Simulink?	Teach the student how to get started with Matlab/Simulink.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
2	3	Working with Blocks, Block Settings, Model Annotation	Introducing the student to dealing with blocks and their settings.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
3	3	The Solver, Sources Library	Introducing the student to the resource library and settings of the Simlink window.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
4	3	Sinks Library, Math Operations Library	Introducing the student to using the library of mathematical operations blocks and showing the results.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
5	3	User Defined Functions & Lookup Tables	Introducing the student to building user-programmed blocks and dealing with logical tables.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
6	3	Ports & Subsystems Signal Routing & Logicals	Introducing the student to the explanation of interconnected secondary systems and how to communicate signals.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
7	3	Integration and Differentiation	Introducing the student to explaining how to represent differential and integral equations using simulation.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
8	3	MATLAB & Simulink Working Together	Introducing the student to the possibility of running code and simulation at the same time.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
9	3	Examples Models	Introducing the student to solving problems through examples	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports

10	3	Simulink Shortcuts	Introducing the student to the use of existing abbreviations.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
11	3	The Solver: Zero-Crossing Options	Introducing the student to solving a step variable by dynamically adjusting the size of the time step, causing it to increase when the variable changes slowly and decrease when the variable changes quickly.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
12	3	Simulink Online Documentation	Introducing the student to logging in and obtaining additional information and assistance in dealing with salmon.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
13	3	**Further Examples**	More training at a similar level to the exercises	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
14	3	Introduction To The Arduino Microcontroller, Arduino Sketch Structure	Introducing the student to how to program the Arduino.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
15	3	Example: Using a Solderless Breadboard, Servomotors	Explanation of applied examples of Arduino programming	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)	Modeling and simulation of systems using M**ATLAB and Simulink**
Main references (sources)	1- Applied Mathematical Modelling of

	Engineering Problems **2- *Introduction to Simulink®*** ***with Engineering Applications***
Recommended supporting books and references (scientific journals, reports....)	All solid scientific journals that are related to the broad concept of programming using MATLAB.
Electronic references, Internet sites	**https://www.mathworks.com/**