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	
Control Theory II	
2. Course Code	
EP311	
3. Semester/Year	
Fall Semester/Third Year	
4. The date this description was prepared	
17 / 9 / 2023	
5. Available forms of attendance	
Face-to-Face theoretical lectures	
6. Number of study hours (total) / number of units (total)	
60/3	
7. Name of the course administrator	
Name: Assist. Prof. Dr. Zeyad A. Obaid Email: Zeyad.a.obaid@uodiyala.edu.iq	
8. Course objectives	
Objectives of the study subject	1. After completing an understanding of the methods for extracting the final differential equation for several types of systems, the goal will be to move on to using these equations for the purpose of analyzing their stability. 2. Studying theories of inductivity testing for time-response systems. 3. Design appropriate controllers to improve the response of time systems. 4. Understanding the theories of stability testing of frequency response systems and how to treat them. 5. A general introduction to the most complex systems and methods of modern computer-based control systems.
9. Teaching and learning strategies	
The Strategy	□ Weekly lectures included providing students with the basics and topics related to the pre-skills education outcomes to solve practical problems through presentation, lecture, or conducting experiments. □ Solve a group of practical and applied examples by faculty members. □ Through discussion, students participate in solving some practical problems.

	□ Practical laboratories in the department are monitored by faculty members in the department. □ Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of academic subjects. Giving a seminar to the student in front of his fellow students to enhance his self-confidence.

10. Course structure

Week	Hours	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	The basic principle of stability	A general introduction to systems and the concept of stability in systems	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
2	4	Routh Criterion theorem	Study of the theory of stability testing for time-response systems	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
3	4	Root Locus Stability Theorem (Part 1)	Study of the theory of stability testing based on root locations	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
4	4	Root Locus Stability Theorem (Part 2)	Solutions to examples of the theory of stability testing and knowing the stability of the system through the locations of the roots	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
5	4	An in-person theoretical exam with a practical exam in the laboratory separate from the theoretical one	First month exam	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
6	4	Design of time-response control system	Designing controllers in time-response control systems using various types for the purpose of improving response	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
7	4	Compensators	Study of compensations in the design of control systems for the	Lectures Examples of field	Daily exams seminar Monthly exams

			purpose of improving frequency response performance	practical cases	
8	4	Real industrial examples	Real examples of electrical power systems that include the types of controllers studied	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
9	4	An in-person theoretical exam with a practical exam in the laboratory separate from the theoretical one	Second month exam	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
10	4	Frequency Response analysis	Study of frequency response systems analysis of systems	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
11	4	Bode Plot stability analysis (exact method)	A theory for examining the stability of systems and a method for extracting test results using semi-log paper	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
12	4	Bode Plot stability analysis (approximate method)	A theoretical method for the purpose of extracting examination results that are approximate	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
13	4	General introduction for the advanced computer-based control systems	A general introduction to the most complex modern control methods that are computer-based and the extent of their availability in electrical power systems	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
14	4	An in-person theoretical exam with a practical exam in the laboratory separate from the theoretical one	Third month exam	Lectures Examples of field practical cases	Daily exams seminar Monthly exams
15	4	General discussion for the course output for each student to compare the grades and outcomes of both class and lab exams.	Discussing the course outcomes for each student and identifying weak points by comparing answers in exams,	Lectures Examples of field practical cases	Daily exams seminar Monthly exams

			general assignments, and the laboratory		

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)	Modern control system by "OGATA. Advanced control system by 'ROLAND S.BURNS"
Main references (sources)	Modern control system by "OGATA. Advanced control system by 'ROLAND S.BURNS"
Recommended supporting books and references (scientific journals, reports....)	YouTube Channel for the Lecturer
Electronic references, Internet sites	Search by keywords: Control theory, Root locus, bode plot, control design, PID controller