

**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.

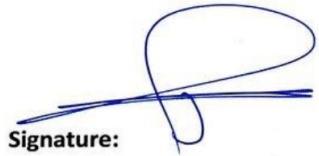
Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

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. Jabbar
Abdulrahman
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. Khader

Course description form

1. Course Name
Measurement & Instruments
2. Course Code
EP303
3. Semester/Year
1 st Semester/Third Year
4. The date this description was prepared
2023 / 9 / 25
5. Available forms of attendance
Face-to-Face theoretical lectures
6. Number of study hours (total) / number of units (total)
30/2
7. Name of the course administrator
Name: Assist. Lect. Mounir Thamer Ismaiel Email: moneerthameer_enge@uodiyala.edu.iq
8. Aims of the Course
The subject of control aims to teach the student the mathematical representation of the control system, analysis of linear control circuits, and teach the student how to build an electrical and mechanical model for the derived equations, transfer functions, and analysis of the frequency field of the control system, in addition to teaching the student about the stability of systems. The goal we seek in teaching this subject is to consolidate the principles and foundations. The theory that is used to create and understand absolutely any electronic electrical circuit.

9· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Cognitive goals.

A1- During the school year, the student learns an idea about the types of systems, whether they are open or equipped with inverse return.

A2- Learn and understand the phase diagram and its reduction.

A3- Learn and understand the Laplace transform and its inverse review.

A4- Learn and understand the foundations of the Roth-Hurwitz stability criterion.

B. The skills goals special to the course.

B1 - Familiarity with the mathematical relationships present within the subject.

B2- Familiarity with all types of systems.

B3- Familiarity with how to carry out practical experiments related to the subject.

B4- Familiarity with the basic concepts of stability methods, their types and practical applications.

Teaching and Learning Methods

- The lecturer delivers detailed theoretical lectures
- The lecturer requests periodic reports on the basic topics of the subject.

Assessment methods

- Daily exams with practical and scientific questions.
- Participation marks for difficult competition questions among students.
- Assigning grades to homework assignments and reports assigned to them.
- Semester exams for the curriculum, in addition to the mid-year exam and final exam.

C. Affective and value goals

C1- Urging the student to think about finding models for systems, whether mechanical or electrical.

C2- Urging the student to think about the importance of finding and analyzing the frequency field of the control system.

C2- Urging the student to think about the factors affecting the stability of systems.

C4- Urging the student to think about choosing the appropriate components and contributing to the process of designing transmitter and receiver circuits for electromagnetic waves.

Teaching and Learning Methods

- The lecturer delivers detailed theoretical lectures.
- The lecturer is familiar with the basic concepts of the components of practical control systems, which enhances the method of learning and teaching.
- The lecturer introduces students to the most important components in designing various communications systems, theoretically and practically.

Assessment methods

- Daily exams with practical and scientific questions.
- Participation marks for difficult competition questions among students.
- Assigning grades to homework assignments and reports assigned to them.
- Semester exams for the curriculum, in addition to the mid-year exam and final exam.

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1- Enabling students to write reports on topics related to the subject of control.

D2- Enabling students to link theories with the practical reality of electrical circuits.

D3- Enabling students to pass professional tests organized by local or international bodies.

D4- Enabling students to continue self-development after graduation.

D5- Establishing special seminars for students for the purpose of self-development of their personalities.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
Week 1	2	An introduction to the subject of instruments and measurements, with a historical overview of it	International system of units , Systems of Units and Standards of Measurement, Systems of units	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 2	2	Work in the field of time and	electrical standard, time and frequency	Presented in power point format	Daily exams + practical experiments +

		frequency for electrical devices	standards, IEEE standards Small Signal Diode Model Other Diode types:		monthly exams Daily exams + practical experiments + monthly exams
Week 3 to Week 4	4	An explanation of the general characteristics of measuring devices	Definitions, accuracy, precision, resolution, composition of measuring system selection factors and trends	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 5	2	Errors associated with the measurement process	Measurement and Error	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 6	2	Types of errors associated with the measurement process, their causes, and methods of dealing with them	types of error: gross, systematic, random, and limiting errors	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams

Week 7 to Week 8	4	Statistical analysis of data extracted from electrical measuring devices	Statistical Analysis of Data, Instruments for Measuring Basic Electrical Parameters	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 9	2	Electric bridge and methods of using it in measurements	Bridges and their Applications	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 10	2	Oscilloscope device, its origin and method of use	Oscilloscopes	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 11	2	An explanation of the types of sensors for location, pressure, speed, acceleration, etc	Transducers: Position, pressure, velocity, acceleration, force, torque, temperature, Photosensitive transducers	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 12	2	Data recording devices	Data Recording Instruments	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 14	2	Noise and ways to treat and reduce it	Noise: Limits to sensitivity, accuracy & speed in both analog and digital systems.	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams +

					practical experiments + monthly exams
Week 14	2	Noise and ways to treat and reduce it	S/N enhancement techniques	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams
Week 15	2	Computer-based instrumentation and measurements	Computer-based Instrumentation and Measurement	Presented in power point format	Daily exams + practical experiments + monthly exams Daily exams + practical experiments + monthly exams

11. Infrastructure	
1. Books Required reading:	1. Alan S Morris, 2001, Measurement and Instrumentation Principles third Edition 2-Dominique Placko, 2007, Fundamentals of Instrumentation and Measurement, ISTE Ltd
2. Main references (sources)	<ul style="list-style-type: none"> • College library to obtain additional sources for the curriculum. • Check scientific websites to see recent developments in the subject.
A- Recommended books and references (scientific journals, reports...).	<ul style="list-style-type: none"> • All solid scientific journals that are related to the broad concept of the subject of control.
B-Electronic references, Internet sites...	Prithwiraj Purkait, 2013, Budhaditya Biswas, Santanu Das, Electrical and Electronics Measurements and Instrumentation, McGraw Hill Education
12. The development of the curriculum plan	
Updating publications curricula in high-ranking universities and increasing their requirements.	

