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. Jabbar

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

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Course description form

1. **Course Name**
Digital signal processing

2. **Course Code**
EP411

3. **Semester/Year**
1st Semester/Fourth 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)**
30/2

7. **Name of the course administrator**
Name: Lect. Saja Mazin Sami
Email: **S.M.sami**@uodiyala.edu.iq

8. **Course objectives**	
Objectives of the study subject	The digital signal processing curriculum aims to introduce the student to the skills of the digital signal processing subject and how to design types of filters .

9. Teaching and learning strategies.	
The Strategy	1 - Providing students with the basics and additional topics related to the previous educational outcomes and skills to solve practical problems. 2- Solving a group of practical examples by the academic staff. 3- During the lecture, students participate in solving some practical problems.

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<table>
<tr><td colspan="6">10. Course Structure.</td></tr>
<tr>
<th>Wek</th>
<th>Hours</th>
<th>Name of the unit or topic</th>
<th>Required learning outcomes</th>
<th>Learning method</th>
<th>Interpolation and solving differential equations.</th>
</tr>
<tr>
<td>Week 1 to 2Week</td>
<td>4</td>
<td>Introduction to digital signal processing : Basic elements of DSP, DSP vs. ASP, application of DSP, Continues time signals vs. discrete time signals</td>
<td>The student learns an introduction to the subject and applications of the digital signal processor</td>
<td>Whiteboard and Data show</td>
<td>Daily, oral, monthly, written examinations and reports</td>
</tr>
<tr>
<td>3Week to 6Week</td>
<td>8</td>
<td>Standard of discrete time signals (sequences): Unit sample sequence, Unit step sequence, Unit ramp sequence, Exponential sequence

(classification of discrete time signals)System properties: Static and dynamic system, shift invariant and shift variant system, Causal and non-causal system, linear and nonlinear system, stable and</td>
<td>The student learns the basic types of signs</td>
<td>Whiteboard and Data show</td>
<td>Daily, oral, monthly, written examinations and reports</td>
</tr>
</table>

		unstable system. Convolution : Direct form method, graphical method, slide rule method Discrete Fourier transform (DFT), Linear convolution using DFT			
7Week to Week 11	10	Inverse Discrete Fourier transform (IDFT) Fast Fourier transform(FFT): Butterfly computation , Invers Fast Fourier transform (IFFT) Introduction to Z transform: Definition of Z transform and ROC, Properties of Z transform, Inverse Z transform Digital Filters	The Fourier transform and Z transform, as well as digital filters, are explained.	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
Week to 12 Week	8	Realization of digital filter: Basic FIR filter	FIR &IIR filter is explained	Whiteboard and Data show	Daily, oral, monthly, written

15		structure, direct form of FIR structure, Cascaded form of FIR structure			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. A. Shenoi, Introduction to Digital Signal processing and filter Design, Wiley-Inter science, 2006.
Main references (sources)	• Digital Signal Processing: principles, algorithms, and applications, third edition, by John G. Proakis and Dimitris G. Manolakis. • Digital Signal Processing, fundamentals and applications, 2008, by Li Tan.
Recommended supporting books and references (scientific journals, reports....)	British BS-Std American IEEE, ANSI and German VDE.
Electronic references, Internet sites	Any other materials available on the web.