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

Electromagnetics I

2. Course Code

EP208

3. Semester/Year

1st Semester/Second Year

4. The date this description was prepared

1/9/2023

5. Available forms of attendance

Face-to-Face theoretical lectures

6. Number of study hours (total) / number of units (total)

30/6

7. Name of the course administrator

Name: Ass .Lect. Yasir Ghazi Rashid
Email: yasserghazee_enge@uodiyala.edu.iq

8. Course objectives

Objectives of the study subject	The main goal of studying the electromagnetic theory course is to identify the basic principles of this theory, as follows • Study vectors in general in systems of perpendicular, cylindrical and spherical axes. And also a study of field dispersion, Chaos's theorem, field rotation, Stock's theorem, and finally Crane's theorem. • Studying the stable electric field in vacuum and treating the Laplace and Poisin equations and their solutions in Cartesian, cylindrical and spherical coordinate systems. Also, a study of the electric dipole and electric quadrupole, the single solution theorem, and the method of electrical images. • Study the stable electric field in insulating materials and understand the phenomenon of polarization in these materials. In addition to calculating electrical displacement, electrical influence, and dielectric constant, as well as studying the Laplace and Poise equations in insulating materials.

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 the academic subjects. ❖ Presenting 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	Interpolation and solving differential equations.
1	2	**Electromagnetics Overview** *What is electromagnetics? Why study electromagnetics? Course topics*	An introductory introduction to electromagnetic fields and their importance in electrical engineering	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
2	2	**Vector Algebra:** *Scalars and Vectors; Unit Vector; Vector Addition and Subtraction; Position and Distance Vectors; Vector Multiplication; Components of a Vector*	Vector review	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
3&4	4	**Coordinate Systems and Transformation:** *Cartesian Coordinates (x, y, z); Circular Cylindrical Coordinates (ρ, φ, z); Spherical Coordinates (r, ∅, φ); Constant-Coordinate Surfaces, the transformation between coordinate system.* **Vector Calculus:** *Differential Length, Area, and Volume; Line, Surface, and Volume Integrals Del Operator; Gradient of a Scalar; Divergence of a Vector and Divergence Theorem.*	Learn about coordinate systems, transformation, and vector calculations	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports

5&6&7	6	**Coulomb's Law and Electric Field Intensity:** *The experimental law of Coulomb, Electric field intensity; Field of n point charges; Electric fields due to continuous charge distributions (line charge, surface charge and volume charge distributions), Steam line and sketches of fields; Electric flux density.*	Study of Coulomb's law and electric field intensity	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
8&9&10	6	**Gauss's Law-Electric Flux Density:** *Gauss's law; Some symmetrical charge distribution, Application of gauss's law; Maxwell's first equation (for electrostatics); The vector operator and the divergence theorem.*	Study of Chaos' law and its applications	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
11&12	4	**Electrostatic Fields** *Coulomb's Law and Field Intensity; Electric Flux Density, and Gauss's Law; Applications of Gauss's Law; Energy and Potential.*	Identify the electric field intensity	Whiteboard and Data show	Daily, oral, monthly, written examinations and reports
13&14&15	6	**Energy and Potential:** *Energy and potential-energy expended in moving a point charge in an electric field; The line integrals; Potential difference and potential, The potential field of a point charge; The potential field of a system of charges; Conservative property; Potential gradient; The dipole energy density in the electrostatic field.*	Learn how to calculate energy and electrical magnitude Difference	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.

Quizzes	10% (10)
Assignments	10% (10)
Projects	10% (10)
Report	10% (10)
Annual quest	40% (40)
Final Exam	60% (60)
Total assessment	100% (100 Marks)

12. Learning and teaching resources	
Required textbooks (methodology, if any)	Matthew, N. O. "Sadiku Elements of Electromagnetics." (2018).
Main references (sources)	Electromagnetics By Joseph Edminister (Schaum's Outline Series) : Joseph Edminister, Vishnu Priye Mc Graw Hill Education
Recommended supporting books and references (scientific journals, reports....)	All scientific magazines and periodicals related to electromagnetic fields
Electronic references, Internet sites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering