Al-Ayen Iraqi University

Bachelor of Science (B.Sc.) - *Department: Healthy Physics and Radiation Therapy*

بكالوريوس علوم - هندسة تقنيات الفيزياء الصحية والعلاج الإشعاعي

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1. Overview

This catalogue is about the courses (modules) given by the program of Electrical Engineering to gain the Bachelor of Science degree. The program delivers (xx) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج الهندسة الكهربائية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (٤٠) مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2025-2026

Module 1

Code	Course/Module Title	ECTS	Semester
ATU17011	Academic English	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	0	18	32
Description			
Academic English subject is essential for developing students' communication skills, with lectures structured according to the provided curriculum units. The curriculum relied on reputable sources such as Headway, focusing on teaching the fundamentals of the language, including grammar and vocabulary. The four language skills were developed: reading through diverse texts like stories and articles; writing through exercises that included composing essays and letters; listening by using audio materials such as conversations and news reports; and speaking through interactive activities and discussion workshops. The course aims to enhance students' understanding of language fundamentals, develop effective communication skills, and prepare them to face academic and professional challenges. Thus, English is a vital tool for building linguistic abilities and enhancing students' life skills.			

Module 2

Code	Course/Module Title	ECTS	Semester
ATU17012	Computer Principals	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	48	52
Description			
The module consists of the following information: What is an operating system and what it can do, types of operating systems the features importance (95, 97, 2000, Me, XP, Vista, 7, 8, 8.1, and 10) and their characteristics; explain the differences between operating systems and software applications; computer power on/ off; using mouse and their buttons. Microsoft office Word, Excel, Power point. The concept of networks and their types, the concept of the Internet and its operation. A description of the main screen and its components, how to connect with the World Wide Web)). Take advantage of popular search engines such as Yahoo, Google. Learn how to search for and access information. Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window). Revision problem classes. Variables and assignment statement, logical operator. Arrays, built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort. Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits). Arguments and return values, M- file, input-output statement.			

Module 3

Code	Course/Module Title	ECTS	Semester
ATU17013	General biology	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	3	108	42
Description			
General Biology is a comprehensive study of living organisms and their relationships with their environment. This course covers the basic principles of biology, including the study of cells, tissues, organs, and systems in living organisms. It also focuses on basic biological processes such as reproduction, growth, metabolism, and heredity. The course also includes the study of the biological classification of living organisms and their organization into different groups such as bacteria, plants, and animals. The interactions between living organisms and their environment are addressed, as well as the effects of environmental factors on growth and development. Through this course, students learn how to analyze ecological interactions and the role of ecosystems in sustaining life on planet Earth. General Biology is a foundation for understanding other biological sciences and provides an important knowledge base for students in fields such as medicine, agriculture, and the environment.			

Module 4

Code	Course/Module Title	ECTS	Semester
ATU17014	Workshop	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	4	63	62
Description			
The objective of studying the engineering workshops course is to train students to use the tools and equipment available in engineering workshops to carry out various engineering works. Students learn the basics of welding, lathe, milling, carpentry, various measuring devices in the laboratory, the printing board (breadboard), resistors and their reading, capacitors and their types, in addition to understanding maintenance and repair methods. Topics usually include occupational safety (the importance of following safety standards in engineering workshops), various measuring tools and devices (identifying the hand and electrical tools used in workshops), welding (learning welding techniques of various types such as soldering with an electric iron), and reading the electronic board (students learn how to design the electronic board on the printed board, install the component on the board, and solder it). The course combines theoretical knowledge and practical application to ensure that students acquire the skills necessary to work in the field of applied engineering.			

Module 5

Code	Course/Module Title	ECTS	Semester
ATU17015	Organic chemistry	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	3	108	92
Description			
This course aims to provide comprehensive details about organic reactions, molecular structures, biological functions of organic compounds, and methods of analysis and diagnosis. The course is implemented through theoretical lectures that provide basic concepts and practical applications, in addition to laboratory sessions that allow students the opportunity to apply the concepts they have learned in reality. Also Learning bonding and molecular structure, Nomenclature of Alkanes, preparation and reaction for Alkanes and Nomenclature of Alkenes, preparation and reaction of Alkenes, and Acidity and basic for Acetylene and water and ammonia, problems and review and Alkyl halides, homotypic and heterolysis chemistry structure and Aromaticity, benzene structure, Reactions, classification , Numen culture, physical properties and Reaction of alkyl halides , Nucleophilic substitution The course aims to equip students with analytical and applied skills in the field of organic chemistry to enable them to continue their studies and apply their knowledge in various engineering and technology fields.			

Module 6

Code	Course/Module Title	ECTS	Semester
ATU17015	Engineering Drawing	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	4	59	66
Description			
The Engineering Drawing Course Model aims to help students better understand the basics of complex engineering drawings, develop and improve their ability to mentally manipulate and visualize objects in 3D space based on 2D drawings, learn how to draw diagrams, take measurements and data and convert them into drawings, and acquire basic skills of AutoCAD Such as drawing commands : draw point, line, polyline, P-line, Spline, X-line, rectangle, polygon, circle, arc, and ellipse and learn the Modify Tools commands : Selection tool, erase, undo, redo, inflate, move, copy, rotate, reflect, matrix selection, alignment, scale, stretch, elongate, trim, stretch, break, join, intersect, slice, and zoom. Learn how to assign: dimension—linear, aligned, radius, diameter, center mark, angle, arc length, continuous, baseline, tolerance, dimension space, dimension break, jogged radius, and ordinate dimensions. Dealing with: Text, Style, M text, Scale text, Spell, Knowing the hatching objects, 3D modeling, and drawing the exercises.			

4. Contact

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