

University Of Alshaab
جامعة الشعب



*First Cycle – Bachelor's Degree (B.Sc.) – Artificial
Intelligence Engineering*

بكالوريوس - هندسة ذكاء اصطناعي



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1. Overview

This catalogue is about the courses (modules) given by the program of Artificial Intelligence Engineering to gain the Bachelor of Science degree. The program delivers (40) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج هندسة الذكاء الاصطناعي للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (56) مادة دراسية، على سبيل المثال، مع (6000) إجمالي ساعات حمل الطالب و 240 إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
UREQ101	Democracy & Human Rights	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
<p>تعريف حقوق الانسان وحقوق الانسان في الحضارات القديمة, تعريف الحق وتعريف الانسان ومعرفة أهمية حقوق الانسان بالنسبة للإنسان والمجتمع أيضا دراسة حقوق الانسان في الحضارات كالحضارة المصرية والعراقية واليونانية والرومانية.</p> <p>معرفة حقوق الانسان في الأديان السماوية واهمها الإسلام مصادر حقوق الانسان تتضمن (مصادر دولية كالإعلان العالمي لحقوق الانسان والعهدان الدوليان والمصادر الإقليمية التي تشمل الاتفاقيات الإقليمية كالاتفاقية الأوروبية والأمريكية والدستور) ضمانات حقوق الانسان (كالضمانات الدستورية والقانونية), الاتفاقيات الدولية والإقليمية لحقوق الانسان, الحريات العامة وانواعها والمقارنة فيما بينها. مستقبل حقوق الانسان والعولمة وحقوق الانسان.</p> <p>تعريف وتاريخ وأنواع الديمقراطية (دراسة تعريف ونشأة وتطور الديمقراطية مبادئها وانواعها كالديمقراطية المباشرة وغير المباشرة والنظام الرئاسي والبرلماني) تعريف الانتخاب وشروطه وأنواع النظم الانتخابية وتعريف المجلس النيابي. العلاقة بين الديمقراطية وحقوق الانسان.</p>			

Module 2

Code	Course/Module Title	ECTS	Semester
CREQ101	Electrical Circuits	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	79	71
Description			
<p>Basic Concepts: Systems of Units, Charge and Current, Voltage, Power and Energy, Free electrons, electric charge & types of electric materials, Definition of: electric current, electric current flowing through a conductor Definition of electric voltage Polarity of electric voltage across an element. The difference between electric potentials and electric voltage Linear and non-linear elements: resistances, conductance, capacitances, and inductances. Definition of: Power and energy, Sources (Independent Source & Dependent Source)</p> <p>Electrical Resistance and Conductance, Types of Resistors. Basic Laws: Nodes, Branches, and Loops, Planar and Non-planar Circuits, Ohm's Law, Kirchhoff's Laws.</p> <p>Circuit Transformations: Series Resistors and Voltage Division, Parallel Resistors and Current Division, Star-Delta Transformations, Source Transformations. Methods of Analysis: Mesh Analysis, Nodal Analysis. Circuit Theorems: Superposition, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer. Magnetic Circuits.</p>			

Module 32

Code	Course/Module Title	ECTS	Semester
CREQ103	Computer Programming	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>Introduction to computers and Classification of programming languages, Introduction to problem solving, Computers and Programming Languages, The Main structure of Python programs, Processing a Python Program. Basics of a Python Program, Data Types, Variables, Arithmetic Operators, Assignment and Input Statements.</p> <p>Input / Output, I/O Streams, Predefined Functions, Output Formatting, Control Structures I (Selection): Relational Operators, Logical Expressions, If/If...else, Block Statements, Switch Structures, Control Structures I (Repetition): While Looping, Do...while Looping, For Looping, Break and continue Statements, Preparatory week before the final Exam</p> <p>User-Defined Functions, User-defined simple data types and the string type, Arrays and strings (2D array of characters), Pointers, Classes, File Input/Output.</p>			

Module 4

Code	Course/Module Title	ECTS	Semester
ARIE102	Computer Skills	3	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	64	11
Description			
<p>Overview of computers: basic components, applications. GUI operating systems: Microsoft Windows operating system. Microsoft Office Word: getting started with Word, editing a document and formatting text and paragraphs, adding tables and inserting graphic objects, controlling page appearance and proofing a document.</p> <p>Microsoft Office Excel: getting started with Excel, sorting, selecting and subtotaling data, formulas and functions, worksheet formatting and presentation. Microsoft Office PowerPoint: getting started with PowerPoint, developing a PowerPoint presentation, adding graphical elements to your presentation and modifying objects in your presentation, adding graphical elements, tables and charts to your presentation and modifying objects in your presentation, prepare to deliver your presentation.</p>			

Module 5

Code	Course/Module Title	ECTS	Semester
ARIE101	Engineering Drawing	4	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	2	48	52
Description			
<p>Introduction to Engineering Drawing and Drawing Instruments, Conventions, viewing of engineering drawing sheets, Method of Folding of printed Drawing sheet, Drawing board, T-square, Drafter. Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, and Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.</p> <p>Lines, polygons, ellipse etc., Geometrical figures and blocks with dimension, transferring measurement from the given object to the free hand sketches., Solid objects, Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions, Free hand drawing of hand tools and measuring tools, simple fasteners trade related sketches.</p> <p>Drawing of Geometrical figures, Dimensioning, Lettering & Numbering, Sizes and layout of drawing sheets, Method of presentation of Engineering Drawing, Symbolic representation – different symbols used in the trades, Projections.</p> <p>Sign and Symbols of Electrical, Electronics and related trades, Electrical earthing diagram – Drawing the schematic diagram of plate and pipe earthing. Maps, and Charts</p>			

Module 6

Code	Course/Module Title	ECTS	Semester
CREQ101	Mathematics I	5	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	62
Description			
<p>Preliminaries Cartesian coordinates, polar coordinates, slope of lines, angle of inclination. Functions, types of functions, graph of the functions, domain and range of functions. Review of trigonometric function: graph of trigonometric function, range and domain of trigonometric functions, identities. Limits and Continuity: Properties, limits involving infinity, continuity.</p> <p>Transcendental functions: Inverse function, graph of inverse function, Logarithmic and exponential functions, inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions.</p> <p>Derivatives: Definition, rules of derivative, Implicit differentiation, L hospital's rule, derivative of inverse functions</p> <p>Applications of derivatives: rate of change problems, Relative maximum and relative minimum, Curve sketching with 1st and 2nd derivative, Linearization, Mean value theorem, Initial value problem.</p> <p>Complex numbers: Basic definitions. The geometric representations of the complex numbers, argand diagram, Basic operations with complex numbers, Euler's Formula. Vectors: Introduction to vectors</p>			

Modul 7

Code	Course/Module Title	ECTS	Semester
ARIE103	Introduction to AI	4	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	64	36
Description			
<p>Data science and artificial intelligence is a rapidly expanding applied discipline shaping the world around us and a dramatically growing field of employment. Data science is also the foundation of the technology that supports modern approaches to AI-based products and services. The BSc Data Science and AI program offers deep engagement with data science and artificial intelligence competencies, as well as a critical perspective on ethical data and AI practices. This includes statistical theory, mathematics, data structures, computational methods, machine learning and software engineering.</p>			

The program starts with the definition of AI, AI Basics, Expert systems, embedded systems. Network fundamentals, IoT, Algorithms, and Finally Generative AI.

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