Al-Karkh University for Science
جامعة الكرخ للعلوم

First Cycle – Bachelor's degree (B.Sc.) – Artificial Intelligence and Robotics Engineering

بكالوريوس هندسة – هندسة الذكاء الاصطناعي والانسان الالي

Table of Contents | جدول المحتويات

1. Mission & Vision Statement

Vision Statement

The Department of Artificial Intelligence and Robotics Engineering is an advanced academic department that focuses on studying and developing intelligent systems and robots capable of performing complex tasks similar to human abilities. The department strives to integrate computer science, mathematics, engineering, and data science to design innovative solutions in fields such as machine learning, natural language processing, intelligent robotics, and computer vision.

To be a leading department in Artificial Intelligence and Robotics Engineering, preparing graduates who contribute to industry and scientific research.

Mission Statement

The department also aims to equip students with both theoretical and practical skills necessary to design and develop intelligent systems capable of interacting with the environment and making decisions, with an emphasis on innovation, scientific research, and modern industrial applications.

To provide outstanding academic programs that combine theoretical knowledge with practical skills, enabling graduates to meet the challenges of the Fourth Industrial Revolution.

2. Program Specification

Programme code:	BSc-AIR	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Artificial intelligence is an expanding discipline that continues to transform how people live and work. Consequently, there is an increasing demand across industries for specialists in robotics and AI. This program introduces students to key concepts such as problem solving, decision-making, and knowledge representation, alongside the development of algorithms for autonomous robotic navigation. It also covers neural networks, training methodologies, optimization strategies, and practical applications in computer vision and natural language processing. In addition, students gain a solid foundation in data analysis, statistical techniques, visualization, and data mining. Through hands-on projects and assignments, they develop practical experience in building and implementing intelligent systems.

This interdisciplinary undergraduate program is designed to prepare students with the expertise required to design, develop, and deploy robotic and AI-based solutions. It offers a well-rounded curriculum that integrates theoretical foundations with practical applications, ensuring graduates acquire both technical knowledge and professional competencies in robotics and intelligent systems. The program emphasizes innovation and prepares students to contribute effectively to advancements in robotics and autonomous technologies.

By strengthening their background in engineering, science, mathematics, and artificial intelligence, students are equipped to address real-world challenges. They learn to apply engineering tools and methodologies while considering important aspects such as public safety, health, environmental sustainability, and socio-economic factors.

In the first level, students build a foundation in engineering principles, data structures, logic, and general academic requirements. During the second level, they are introduced to the fundamentals of artificial intelligence and robotics engineering. In the third and fourth levels, students advance into specialized topics, gaining in-depth theoretical and practical knowledge in areas such as machine learning, deep learning, robotics, and mechanical systems. The program also provides flexibility through elective courses, allowing students to pursue their specific interests. Critical thinking and problem-solving skills are fostered through coursework, while teamwork, research capabilities, and practical experience are enhanced through laboratory work, field visits, summer training, and a final-year project.

3. Program Goals

- Equip students with strong foundations in AI and robotics technologies.
- Support scientific research in machine learning, robotics, and IoT.
- Contribute to national industries with innovative smart solutions.

4. Student Learning Outcomes

Graduates of this program are well-prepared to pursue careers across a wide range of sectors, including manufacturing, healthcare, and transportation. They are equally equipped to continue their academic journey in the fields of robotics and artificial intelligence. Throughout the program, students develop a deep understanding of core concepts, algorithms, and real-world applications in AI and robotics. They also acquire the ability to design, implement, and assess advanced robotic systems and intelligent algorithms.

Outcome 1: Engineering Knowledge

Graduates will possess a strong foundation in engineering principles and concepts, along with the ability to apply this knowledge effectively within the domains of artificial intelligence and robotics.

Outcome 2: Problem Solving

Graduates will be capable of identifying, analyzing, and solving complex engineering problems, particularly those related to AI and robotics. This includes formulating solutions, implementing them, and evaluating their performance and effectiveness.

Outcome 3: Design and Development of Solutions

Graduates will be able to design and develop systems, components, or processes that meet specific requirements. They will consider practical constraints such as safety, ethics, and societal impact while selecting appropriate methods and materials.

Outcome 4: Experimentation and Data Analysis

Graduates will demonstrate competence in designing and conducting experiments, as well as analyzing and interpreting data to derive meaningful insights and support sound scientific conclusions.

Outcome 5: Teamwork and Communication

Graduates will be effective team members in multidisciplinary environments. They will be able

to communicate clearly and collaborate efficiently with individuals from diverse backgrounds to achieve shared objectives.

Outcome 6: Professionalism and Ethics

Graduates will exhibit professional conduct, ethical responsibility, and accountability in their work. They will understand the broader societal and environmental implications of engineering decisions and act accordingly.

Outcome 7: Lifelong Learning

Recognizing the continuous evolution of technology, graduates will be committed to ongoing learning and professional growth. They will be adaptable, self-motivated learners capable of keeping pace with emerging technologies and industry practices.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Al-Karkh University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	**التقدير**	**Marks (%)**	**Definition**
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب – قيد المعالجة	(45-49)	More work required but credit awarded

(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its

   ECTS, all are divided by the program

   total ECTS. CGPA of a 4-year B.Sc.

   degree:

   CGPA = [(1st module score x ECTS) + (2nd module score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	ECTS	Module Type	Pre-request
KUS11001	Mathematics	48	77	5.00	B	
KUS11002	Fundamental of computer science	63	12	3.00	B	
KUS11003	Democracy and Human Rights	33	17	2.00	B	
CEN11004	Engineering Drawing	48	77	5.00	B	

CEN11005	Physics	63	62	5.00	B	
AIR11006	Engineering Mechanics	48	77	5.00	B	
AIR11007	Discrete logic	63	62	5.00	C	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	ECTS	Module Type	Pre-request
AIR12008	Fundamentals of Engineering Mathematics	63	87	6.00	B	
AIR12009	Data Structures and Algorithms	63	87	6.00	B	
KUS12010	Arabic Language	33	17	2.00	B	
KUS12011	English Language	33	17	2.00	B	
AIR12012	Chemistry	63	37	4.00	B	
AIR12013	Workshop	48	27	3.00	S	
AIR12014	Electrical Ciruits	78	97	7.00	C	

8. Contact

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