

Sana'a University



**Faculty: Computer and
Information Technology**

Department of Computer science

Artificial Intelligence Program Specifications

Prepared by:

1. Dr. Abdulrahman Alsabri
2. Prof. Ghaleb Algaphari
3. Assoc. Prof. Mussa Ghurab
4. Assoc.Prof. Malek Algabri
5. Dr. Fuad Murshed

Date of preparation

April 2024



Contents

PROGRAM SPECIFICATION DOCUMENT -----	خطأ! الإشارة المرجعية غير معروفة.
ANNEX- 1, SURVEY OF SIMILAR ACCREDITED PROGRAMS AT NATIONAL AND INTERNATIONAL UNIVERSITIES (BENCHMARKS) -----	1 خطأ! الإشارة المرجعية غير معروفة.
ANNEX- 2, SURVEY OF PILOS FOR SIMILAR ACCREDITED PROGRAMS AT NATIONAL AND INTERNATIONAL UNIVERSITIES -----	2 خطأ! الإشارة المرجعية غير معروفة.
ANNEX- 3, SURVEY OF NUMBER OF COURSES AND CREDIT HOURS OF SIMILAR PROGRAMS - معروفة. -----	3 خطأ! الإشارة المرجعية غير معروفة.
ANNEX- 4, COMPARISON OF PROGRAM COURSES AND SIMILAR PROGRAMS COURSES -----	26 5
ANNEX- 5, CODING SYSTEM -----	8 خطأ! الإشارة المرجعية غير معروفة.
ANNEX- 6, MATRIX OF MAPPING PROGRAM PILO'S WITH COURSES -----	29
ANNEX- 7, CVS FOR THE PREPARATION COMMITTEE -----	33

* * *



1. General Information:

1.	Program Name	Artificial Intelligence
2.	Program Type	Bachelor
3.	Total Credit Hours	135
4.	Program Period	4 years
5.	Awarding Institution	Sana'a University
6.	Awarded Degree	Bachelor of Artificial Intelligence
7.	Study System:	Regular attendance
8.	Teaching language	English/Arabic
9.	Departments participating in the program:	Computer Science
10.	Location of teaching:	Sana'a University, Faculty of Computer & IT
11.	Date of current development of the program:	2024
12.	Prepared by:	
13.	Council Approval Date	

2. Introduction:

Artificial Intelligence is a rapidly growing area of IT, which already finds its application in almost every area of life. In the age of knowledge, information, and data, the industrial sector is becoming very demanding for both the production of the technologies and the manpower to utilize these technologies.

The Faculty of Computer and information technology at the Sana'a University addressed this demand



and therefore established a program specially designed for that purpose. Artificial Intelligence program focuses on the theoretical knowledge that is necessary for the students, and the practical side that is imperative to crystallize the theoretical knowledge. Therefore, the program was engineered by experts in the Artificial Intelligence so that our graduate will be equipped with a combination of theories and practices of Artificial Intelligence.

Promising Jobs:

- 1- AI programmers
- 2- Machine learning engineer
- 3- AI scientist
- 4- Data analyst
- 5- Big data architect

3. University Vision, Mission, Values, and Objectives:

University vision:

Sana'a University aspires to national leadership in teaching, learning, scientific research, community service, and to be one of the best regional universities and a house of expertise in Yemen.

University mission:

Contributing to sustainable development efforts by providing a higher education environment that achieves quality standards and distinguished research services in light of a fruitful national partnership based on transparency, professionalism and creativity

University Core values:

1. Leadership
2. Collective work
3. Partnership
4. Transparency
5. Professionalism
6. Creativity.

University Objectives:

- 1- Providing specialized and in-depth study opportunities for students in various fields of knowledge to meet the country's needs for specializations, technicians, and experts.

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



- 2- Taking care of the Arabic language, teaching, developing, and disseminating its use as a scientific and educational language in various fields of knowledge and science, as it is the cultural container for the meanings, values, and morals of Arab and Islamic civilization.
- 3- Developing knowledge by conducting scientific research in various fields of knowledge, whether at the individual or collective level, and directing it to serve the needs of society and development plans.
- 4- . Interest in developing technology and benefiting from it in developing society.
- 5- Encouraging the movement of authorship, translation and publishing in various fields of knowledge, with a special focus on Yemeni heritage.
- 6- Contributing to the advancement of literature and arts and the advancement of science.
- 7- Providing an academic climate conducive to freedom of thought, expression, and publication in a way that does not conflict with Islam and its lofty values and ideals.
- 8- Strengthening ties with universities and public and private institutions in the country to ensure mutual and constructive interaction of knowledge, expertise, resources and participation that ensures effective contribution to achieving comprehensive development in the country.
- 9- Strengthening scientific and cultural ties with Arab and foreign universities, scientific bodies, and research and development centers to help develop the university and enhance its position.
- 10- Providing technical and specialized studies and consultations to various state agencies and public and mixed institutions.
- 11- Contributing to developing policies and work methods in state institutions and agencies, the public and private sectors, and providing innovative models and experiences to solve various problems.
- 12- Raising the efficiency of workers in state institutions and agencies and the public and private sectors, by contributing to in-service preparation and qualification programs.

4. Faculty Vision, Mission, Values, and Objectives:

Vision:

To achieve a leading position locally and excellence regionally in education, research, innovation, and community impact in the fields of computing and technology.

Mission:

Providing distinguished education in the fields of computing and technology to prepare

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



qualified graduates committed to professional ethics and produce innovative research, within a stimulating learning environment and effective community partnerships, addressing labor-market needs and contributing to the achievement of sustainable development and digital transformation.

Values:

- 1) A pioneering and Continuous Education Teamwork
- 2) Transparency and Accountability
- 3) Creativity and Innovation
- 4) Professional integrity and objectivity

Faculty Objectives:

1. 1 Providing distinguished education in the fields of computing and technology to graduate qualified professionals committed to professional ethics, capable of competing and innovating in the labor market, and contributing to sustainable development and digital transformation.
2. Designing and developing distinguished academic and research programs, aligned with quality and accreditation standards, and responsive to evolving challenges and labor-market needs.
3. Offering and improving a stimulating academic environment that fosters active learning, teaching, research, innovation, creativity, and entrepreneurship.
4. Producing innovative research and technological solutions in computing and technology that contribute to sustainable development.
5. Developing and attracting distinguished cadres to enhance education, scientific research, and community service.
6. Building and sustaining effective academic and community partnerships that enhance education, learning, and scientific research.
7. Providing technical consultations, specialized training, and spreading digital culture to empower various sectors and support digital transformation.

5. Department Vision, Mission, and Objectives :

Vision of the Department :

To achieve a leading position locally and excellence regionally in education, scientific research, innovation, and community service in the field of Computer Science.

Mission of the Department:

Offering high-quality education that balances theoretical foundations with practical

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



application in Computer Science to prepare qualified professionals, capable of upholding professional ethics, and producing innovative research—through a stimulating environment and effective academic-industry partnerships—that meet labor-market needs and contribute to the achievement of sustainable development and digital transformation.

Objectives of the Department:

1. Delivering high-quality education that balances theoretical foundations with practical skills in Computer Science to supply society with qualified professionals who uphold professional ethics, are capable of competing and innovating in the labor market locally and regionally, and contribute to achieving sustainable development and digital transformation.
2. Providing and developing high-quality academic and research programs, in accordance with quality standards, that keep pace with ongoing challenges and developments in the fields of Computer Science.
3. Contributing to a stimulating academic environment that nurtures active learning, research, innovation, and entrepreneurship.
4. Producing scientific research and technological solutions in Computer Science that address the needs of society and various sectors, and support sustainable development and digital transformation.
5. Developing and attracting distinguished academic and research talents, thereby reinforcing excellence in education and research.
6. Building effective academic and industrial partnerships that enhance teaching, learning, research, and community service.
7. Providing technical consultancy, specialized training, and disseminating digital knowledge in Computer Science and its applications to empower different sectors and enhance digital transformation.

6. Artificial Intelligence Program Mission and Objectives:

Program Mission:

- Preparing graduates with high-quality scientific competencies through an appropriate interactive environment to provide students with knowledge, applications, and skills in research, innovation, and professional ethics, enabling them to access the enormous and growing opportunities in modern technology and artificial intelligence to meet community service and the needs of the labor market.

Program Objectives:

1. Providing students with the necessary theoretical knowledge and applied skills in the field of computer science and artificial intelligence .
2. Providing students with communication skills, continuous learning, and teamwork to produce work that includes identifying the problem and building intelligent computer

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



solutions within the professional, legal, and ethical framework.

3. Developing students' smart creative skills to develop and evaluate smart systems in the field of computing, improve them, and ensure their quality.
4. Providing graduates with the necessary research skills to continue postgraduate studies in Yemeni and international universities.
5. Preparing the graduate to apply intelligence techniques and modern technologies appropriate to the needs of society.

7. Program Standards & Benchmarks:

Academic Standards:

1. National Academic Reference Standards (NARS) for Undergraduate Computing Programs, Council for Accreditation & Quality Assurance, Republic of Yemen, 2023,
2. National Academic Reference Standards (NARS) for Undergraduate Artificial Intelligence , Council for Accreditation & Quality Assurance, Republic of Yemen, 2023

خطأ! لم يتم العثور على مصدر المرجع.

خطأ! لم يتم العثور على مصدر المرجع.

Program Benchmarks:

1. Jordan University of Science and Technology
https://www.just.edu.jo/facultiesanddepartments/it/Pages/viewplan.aspx?planno=602_e
 Bachelor of Artificial Intelligence
2. Dakota State University
<https://catalog.dsu.edu/mime/media/40/922/BS+Artificial+Intelligence+MAP+23-24+%28002%29.pdf> Bachelor of science in Artificial Intelligence
3. Carnegie Mellon University
<https://www.cs.cmu.edu/bs-in-artificial-intelligence/minor>
 Bachelor of Artificial Intelligence
4. EFFAT UNIVERSITY
<https://www.effatuniversity.edu.sa/english/pages/default.aspx>
 Bachelor of Artificial Intelligence
5. American University of Ras Al Khaimah (AURAK)
https://aurak.ac.ac/undergraduate-degrees/computer-science/bachelor-of-science-in-artificial-intelligence#nav-senior_year
 Bachelor of Science in Artificial Intelligence
6. University of Wollongong.
<https://courses.uow.edu.au/courses/current/766>



Bachelor of Science in Artificial Intelligence

8. Graduate Attributes:

Upon successful completion of an undergraduate Artificial Intelligence program, graduates will be able to:

- Attrib1: Knowledgeable:** has deep and comprehensive AI knowledge
- Attrib2: Problem Solver:** has the skills of problem analysis and solving.
- Attrib3: Developer:** has the skills of AI solutions Development.
- Attrib4: Technical:** has the skills of Modern Tools of AI and Techniques Usage
- Attrib5: Communicator and Collaborator:** has communication and teamwork skills.
- Attrib6: Professional:** committed to professional computing practice and ethics.
- Attrib7: Self-learner:** committed to Lifelong Learning.

9. Program Intended Learning Outcomes (PILOs):

A. Knowledge and Understanding:

Upon successful completion of the undergraduate Artificial Intelligence Program, the graduates will be able to:

- A1. Demonstrate a sound knowledge of computing that leads to exercise critical judgment for solving real world computing and AI problems.
- A2. Show a broad, coherent knowledge and theories of AI discipline with detailed knowledge of key AI algorithms.

B. Cognitive/ Intellectual Skills:

Upon successful completion of the undergraduate Artificial Intelligence Engineering Program, the graduates will be able to:

- B1 Analyze a complex computing problem and to apply principles of AI computing and other relevant disciplines to identify solutions.
- B2 . Design, implement, and evaluate AI-based solution to meet a given set of computing requirements in the context of the program's discipline.

C. Practical and Professional Skills:

Upon successful completion of the undergraduate Artificial Intelligence Program, the graduates will be able to:

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



C1. Apply theory, techniques and tools through the AI life cycle and employ the resulting knowledge to satisfy stakeholders needs.

C2. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

D. General and Transferable Skills:

Upon successful completion of the undergraduate Artificial Intelligence Program, the graduates will be able to:

D1. Communicate effectively in a variety of professional contexts.

D2. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

Program PILOs	PObj1	PObj2	PObj3	PObj4	PObj5
A1	✓	✓			
A2	✓	✓			
B1		✓	✓	✓	
B2		✓	✓	✓	✓
C1		✓	✓	✓	✓
C2		✓	✓		
D1				✓	✓
D2				✓	✓

Teaching Strategy	Description
Lecture/ Interactive lecture	These are lecture/interactive lectures weekly conducted in the class and supported with variety of teaching formats including, lectures and multimedia presentations, use of whiteboard to solve examples and illustrating different tasks and problems introduced by the presentation, and class discussions, in which concepts, approaches, and case studies are presented, explored, and shown students what they need to know.

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Teaching Strategy	Description
Problem solving	This allows students to become more active in their learning as they work out which information, they need to find out how to solve a particular problem.
Tutorials	Tutorial classes are provided to create a stimulating environment for students to work through examples, exercises and case studies. Tutorials include worksheets of carefully-designed questions that make students to think about challenging subjects. They are designed to be used after a brief lecture in which students work in pairs or groups.
Seminar/ Project/Presentation	In each course, different projects which cover a variety tasks in the course will be prepared by the teacher and assigned to different student's groups. Moreover, the teacher needs to set advance work for a selected number of students and then have the selected students present their work to the whole group, for discussion, criticism and suggestions for improvement. Seminar sessions and presentations provide an opportunity to address questions, queries and problems.
Team work (Cooperative Learning)	Group learning involves a large or small group activity that encourages students to focus on a topic and contribute to the overall project. Students then learn practically the team work skills such as dividing the tasks, leading or working with team members, planning, sharing knowledge clearly, time scheduling, searching, reporting, presenting, and resources management, etc.
Laboratory/Practical Experiments-based Sessions/ Simulations	During laboratory sessions, students will be given experiments to work in groups where they can apply and verify the theories and principles gained. This provides them the opportunity to have hands-on experience to design and conduct experiments in addition to analyzing, interpreting resulted data obtained from experiments, and maximize their learning through actual simulation
Interactive Class Discussions	Interactive class discussions are carried out about some aspects, related to the subject. It involves a large or small group activity that encourages students to focus on a topic and contribute to the free flow of ideas. The teacher may begin a brainstorming session by posing a question or a problem, or by introducing a topic. Students then express possible answers, relevant words and ideas
Directed Self-Study	Students are encouraged to undertake independent study to both supplement and consolidate what are being learned.
Exercises and Home Works	Students are given special tasks, exercises, puzzles, and activities during the class or at homes. Students are exposed to and use many skills throughout this strategy such as developing their way of thinking and solving exercises and

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Teaching Strategy	Description
	puzzles, cognition, and use of different searching strategies.
Field Visits/ Training	The students are assigned to perform a site visit to acquire field related information.
Illustrations	Illustrations performing an activity so that learners can observe how it is done in order to help prepare learner to transfer theory to practical application. Moreover, this strategy involves the teacher showing learners how to do something
Brainstorming	It is a process for generating multiple ideas/options in which judgment is suspended until a maximum number of ideas has been generated. It is a common teaching approach that is often used by organizing a meeting of a group of students in a round circle, so that students combined focus their thinking on solving a problem in creative ways, and this strategy is usually followed in educational meetings and work sessions to stimulate students, their thinking and discussion.
Computer laboratory-based Sessions	Practical Applications using a variety of simulations software before the real design and implementation. A variety of web-based searches students will be assigned to learn how they can search for solutions using the Web.
Problem based Learning	This allows students to become more active in their learning as they work out to select which information, they need to find out how to solve a particular problem. They can work out a problem collaboratively, practice research as well as testing different components to come up with a valid solution.
Online Activities	For every unit covered in each course, students will be given opportunities to complete interactive learning activities including discussion forums, quizzes and problem-solving activities through the e-platform.
Minor/Major Project	Minor projects are usually associated with the practical parts of some courses. Major project is the graduation project in which students will apply the theoretical knowledge and practical skills to formulate a project under a supervision of a faculty member.
Case Studies	To be taken in selected subject to be aware regarding the courses.

Assessment Strategy	Description
Written Tests (Mid and Final term Exam)	Mid. term & Final exams for each course is required for all courses except Graduation Projects. These exams will evaluate the extent in which the student understanding of theoretical and applied subjects.
Quizzes	Assigning case studies to students is very helpful to assess the extent of understanding the topics.

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Assessment Strategy	Description
Presentations	Some points are assigned to multiple choice questions and Quizzes in order to assess student ability to follow the lecturer during the study course. quizzes are related to past as well as topics discussed in the period. This helps students develop self-confidence, readiness, and accuracy in major exams
Technical/Practical Report/Project/Practical Lab Sessions/ Simulation	Assessing students to their ability to write theoretical and lab reports as well as the understanding of organizing the reports. The practical lab sessions are required for some courses. To demonstrate the report writing skills, the use of IT and E-learning and the skills to interpret and report data and draw conclusions
Practical Lab Performance Assessment	To demonstrate the personal skills, practical expertise, communication skills, ability to interpret and report data and draw conclusions, and team work expertise they are expected to be learned and gained through their education.
Coursework Activities Assessment	The entire assessment of coursework activities during the teaching period of each course (which includes group and individual work, tests and presentations, etc.)
Homework and Assignments	Assignments are given to students so that they will have the opportunity to use information provided in textbooks, lectures, and other resources to test students' degree of understanding in the discussed topic. For all courses except for project.
Problem Solving	This allows students to become more active in their learning as they work out which information, they need to find out how to solve a particular problem.
Oral exams	Used for courses like Graduate Project and Engineering Training to knowing the knowledge of the students.

10. Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding A1, A2	- Interactive lectures - Seminars/ projects	- Written tests (mid and final terms and quizzes), - Exams, - Written assignments

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



PILOs	Teaching Strategy	Assessment Methods
Intellectual Skills B1, B2	- Interactive class - Discussions - Exercises and home works - Problem solving	- Coursework Activities - Case Studies - Discussions
Professional & practical skills C1, C2	- Tutorials - Exercises and home works - Laboratory-based session	- Reports - Presentations - Assignments - Projects
General & Transferable Skills D1, D2	- Seminar - Projects - Presentation - group learning	- Presentations - Projects - Report

11. Project Assessment:

Each project will be assessed as follows:

Item	Marks Distribution
Presentations	10%
Project Reports	10%
Discussions	10%
Total	100

12. Training Course Assessment (if any):

The training course will be assessed through:

- Reports
- presentations
- discussion

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector

**13. Intended Learning Outcomes Mapping:**

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



14. Program Structure:

No	Requirements		No. of Courses	Credit Hours	Rational Weight %
1.	University Requirements	Compulsory	8	17	12.6%
		Elective	--	--	
2.	Faculty Requirements	Compulsory	6	15	11.0%
		Elective	--	--	
3.	Department Requirements	Compulsory	9	27	20.0%
		Elective	0	--	
4.	Program Requirements	Compulsory	23	68	56.3%
		Elective	3	8	
5.	Field Training (if any)	Compulsory			%
6.	Research Project Courses	Compulsory	-	-	%
	Total:		49	135	100%

14.1. University Requirements

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L*	T**	P***	Prerequisites, Co-requisites
1.	L1,S1	SUI100	Islamic Culture		2	2	-	-	
2.	L1,S1	SUA101	Arabic Language (101)		2	2	-	-	
3.	L1,S1	SUE101	English Language (101)		2	2	-	-	
4.	L1,S2	SUA102	Arabic Language (102)		2	2	-	-	Arabic Language (101)
5.	L1,S2	SUE102	English Language (102)		2	2	-	-	English Language (101)
6.	L1,S1	SUCONF	Arabic Israeli Conflict		2	2	-	-	
7.	L1,S2	SUNC	National Culture		2	2	-	-	
8.	L1,S1	CCS100	Computer skills		3	2		2	
Total					17	18		2	

* L= lecture ** T=tutorial/seminar, *** P= lab/workshop/training/clinical

Elective Courses: none

14.2. Faculty Requirements

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Compulsory Courses									
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	1/1	CCS111	Programming Fundamentals		3	2	-	2	
2	2/2	FRCS202	Communication Skills		2	2	-	-	
3	3/2		Professional Ethics		2	2	-	-	
4	3/1	FCRM301	Research Methodology		2	2	-	-	
5	4/1	FC4106P	Graduation Project I		3	1	4		Graduation Project I
6	4/2	FC4205P	Graduation Project II		3	1	4		
Total					15	10	4	2	

Elective Courses: None									
Total									
14.3. Department requirements									

Compulsory Courses									
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	2/1	CS2101	Object-Oriented Programming		3	2	-	2	---
2	2/1	CS2104	Probability and Statistics		3	2	-	2	
3	2/2	CS2205	Linear Algebra		3	2	2	-	
4	1/1	CS1103	Mathematic I		3	2	-	2	
5	1/2	CS1203	Mathematic II		3	2	-	2	
6	2/2	CS2103	Data structure and Algorithms		3	2	-	2	
7	2/1	CS2102	Computer networks		3	2	-	2	
8	1/2	CS1204	Discrete math		3	2	-	2	
9	3/2	CS3203	Project Management		3	2		2	
Total					27				

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



14.4. Program Major

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	2/2	AI4104	AI and Data Science		3	2	-	2	-----
2	3/1	AI3103	Software engineering		3	2	-	2	
3	3/1	AI3106	Human-Computer Interaction		3	2	-	2	-----
4	2/1	AI2206	Web Design and Programming		3	2	-	2	-----
5	3/1	AI2204	Algorithms Design and Analysis		3	-	-	2	-----
6	3/2	AI3107	Artificial Neural Network		3	2	-	2	-----
7	1/2	AI1205	Artificial Intelligence Fundamentals		3	2	-	2	
8	4/2	AI4203	Computer vision		3	2	-	2	-----
9	1/2	AI3102	Computer Programming		3	2	-	2	-----
10	4/1	AI4103E	Elective (1)		3	2	-	-	
11	2/2	AI2202	Operating systems		3	2	-	2	-----
12	4/2	AI4202E	Elective (2)		3	2	-	2	-----
13	3/2	AI4204E	Science Elective		2	2	-	-	-----
14	3/2	AI4201	Natural Language Processing		3	2	-	2	-----
15	2/1	AI2203	Artificial Intelligence Techniques and Applications		3	2	-	2	-----
16	4/1	AI4101	Deep learning		3	2	-	2	
17	3/2	AI3202	Computational Intelligence and optimization Techniques		3	2	-	2	
18	2/2	AI2105	AI programming		3	2	-	2	-----
19	3/1	AI3101	Data Mining and Warehousing		3	2	-	-	
20	3/1	AI3204	Knowledge Base and Expert System		3	2	-	2	
21	2/2	AI2201	Database Systems		3	2	-	2	-----
22	3/2	AI3206	Machine learning		3	2		2	-----
23	2/2	AI2106	Business Intelligence		3	2		2	
24	3/2	AI3201	Entrepreneurship		2	-		-	
25	3/1	AI3104	Information Security		3	2		2	
26	4/1	AI3205	Data Analysis and Processing		3	2		2	
Total					76				

1.1 Program Elective Courses:

Elective Course

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
-----	------------	-------------	-------------	------------	----------	---	---	---	------------------------------

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1			Artificial Intelligence and Big Data	الذكاء الاصطناعي والبيانات الضخمة	3	2		2	
2			Human-AI Interaction	تفاعل الإنسان والذكاء الاصطناعي	3	2		2	
3			AI Gaming	ألعاب الذكاء الاصطناعي	3	2		2	
4			Genetic Algorithms	الخوارزميات الجينية	3	2		2	
5			Big Data	البيانات الضخمة	3	2		2	
6			Automation Devices	أجهزة التحكم	3	2		2	
7			Data Warehousing	مستودعات البيانات	3	2		2	
8			Sentimental Analytics	تحليل المشاعر	3	2		2	
9			Blockchain	سلسلة الكتل (البلوك تشين)	3	2		2	
10			Machine Translation	الترجمة الآلية	3	2		2	
11			Bioinformatics	المعلوماتية الحيوية	3	2		2	
12			Pattern Recognition	التعرف على الأنماط	3	2		2	
13			Neuroscience	علم الأعصاب	3	2		2	
14			Digital Logic and Design	المنطق الرقمي والتصميم	3	2		2	
15			Fuzzy Logic	المنطق الضبابي	3	2		2	
16			Advanced Neural Network	الشبكات العصبية المتقدمة	3	2		2	
17			Cloud Computing and IoT	الحوسبة السحابية وإنترنت الأشياء	3	2		2	
18			Information Retrieval	استرجاع المعلومات	3	2		2	
19			Multi-Agent Systems	النظم متعددة الوكلاء	3	2		2	
20			Artificial Intelligence Planning	تخطيط الذكاء الاصطناعي	3	2		2	
21			Artificial Intelligence for Computational Biology and Bioinformatics	الذكاء الاصطناعي للأحياء الحاسوبية والمعلوماتية الحيوية	3	2		2	
22			Drones and Autonomous Systems	نظم الطائرات ذاتية القيادة والطائرات بدون طيار	3	2		2	
23			Artificial Intelligence for Financial and Industrial Applications	الذكاء الاصطناعي للتطبيقات الصناعية والمالية	3	2		2	
24			Artificial Intelligence for Medicine and Healthcare	الذكاء الاصطناعي للطب والرعاية الصحية	3	2		2	
25			Mobile Application Development	تطوير تطبيقات الموبايل	3	2		2	
26			Database Management System	نظم إدارة قواعد البيانات	3	2		2	
27			Audio and Speech Processing	معالجة الكلام ولصوت	3	2		2	
28			Smart Systems	النظم الذكية	3	2		2	
29			Introduction to robotics	مقدمة في الروبوتات	3	2		2	
30			Critical Thinking and Problem solving	التفكير الناقد وحل المشكلات	3				
			Science Elective Courses:	مقررات العلوم الاختيارية:					
			General Physic	فيزياء عامة	2				
			General Biology	أحياء عامة	2				
			General Chemistry	كيمياء عامة	2				
Total									

Field Training Courses (if any)									
No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1			Field Training		3				
Total									

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



15. Study Plan:

First Year -First Semester

No	Course Code	Course Title		Credit Hour	Theory Hour		Lab.
		English	Arabic		lecture	Exercise	
1	SUI100	Islamic Culture	الثقافة الإسلامية	2	2	-	-
2	SUA101	Arabic Language (101)	اللغة العربية (101)	2	2	-	-
3	SUE101	English Language (101)	اللغة الانجليزية (101)	2	2	-	-
4	SUCONF	Arabic Israeli Conflict	الصراع العربي الإسرائيلي	2	2		
5	CCS100	Computer Skills	مهارات الحاسوب	3	2	-	-
6	CCS111	Programming Fundamentals	أساسيات البرمجة	3	2	-	2
7	MAT101	Mathematics (1)	الرياضيات (1)	3	2	2	-
Total Hours				17			

First Year -Second Semester

No	Course Code	Course Title		Credit Hour	Theory Hour		Lab.
		English	Arabic		lecture	exercise	
1	SUA102	Arabic Language (102)	اللغة العربية (102)	2	2	-	-
2	SUE102	English Language (102)	اللغة الانجليزية (102)	2	2	-	-
3	SUNC	National Culture	الثقافة الوطنية	2	2	-	-
4	MAT102	Mathematics (2)	الرياضيات (2)	3	2	2	
5		Discrete Mathematics	الرياضيات المنقطعة	3	2	2	
6		Computer Programming	برمجة الحاسوب	3	2	-	2
7		Artificial Intelligence Fundamentals	أساسيات الذكاء الاصطناعي	3	2	-	2
Total Hours				18			

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Second Year -First Semester							
No	Course Code	Course Title		Credit Hour	Hour Theory		.Lab
		English	Arabic		lecture	Exercise	
1		Object-Oriented Programming	البرمجة الكائنية الموجهة	3	2	-	2
2		Web Design and Programming	تصميم وبرمجة الويب	3	2	-	2
3		Computer Networks	شبكات الحاسوب	3	2	-	2
4		Probability and Statistics	الإحصاء والاحتمالات	3	2	2	-
5		Database Systems	نظم قواعد البيانات	3	2	-	2
6		Artificial Intelligence Techniques and Applications	تطبيقات وتقنيات الذكاء الاصطناعي	3	2	-	-
Total Hours				18			

Second Year -Second Semester							
No	Course Code	Title Course		Credit Hour	Hour Theory		.Lab
		English	Arabic		lecture	Exercise	
1		Communication Skills	مهارات الاتصال	2	2	-	-
2		Operating Systems	نظم التشغيل	3	2	-	2
3		Data Structures and Algorithms	هياكل البيانات والخوارزميات	3	2	-	2
4		AI Programming	برمجة الذكاء الاصطناعي	3	2	-	2
5		AI and Data Science	الذكاء الاصطناعي وعلم البيانات	3	2	2	2
6		Linear Algebra	الجبر الخطي	3	2	-	2
7		Business Intelligence	ذكاء الأعمال	3	2	-	2
Total Hours				20			

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Third Year -First Semester							
No	Course Code	Course Title		Credit Hour	Hour Theory		Lab
		English	Arabic		lecture	Exercise	
1		Research Methodology	منهجية البحث	2	2	-	-
2		Information Security	أمن المعلومات	3	2	-	2
3		Human-Computer Interaction	تفاعل الإنسان والحاسوب	3	2	-	2
4		Software Engineering	هندسة البرمجيات	3	2	-	2
5		Algorithms Design and Analysis	تصميم وتحليل الخوارزميات	3	2	-	2
6		Knowledge Base and Expert System	قواعد المعرفة والنظم الخبيرة	3	2	-	2
7		Data Mining and Warehousing	تنقيب البيانات ومستودعاتها	3	2		2
Total Hour				20			

Third Year -Second Semester							
No	Course Code	Title Course		Credit Hour	Hour Theory		Lab
		English	Arabic		Lecture	Exercise	
1		Professional Ethics	أخلاقيات المهنة	2	2	-	2
2		Project Management	إدارة المشاريع	3	2	-	2
3		Artificial Neural Network	الشبكات العصبية الاصطناعية	3	2	-	2
4		Computational Intelligence and optimization Techniques	الذكاء الحاسوبي وأساليب التحسين	3	2	-	2
5		Natural Language Processing	معالجة اللغة الطبيعية	3	2	-	-
6		Machine Learning	تعلم الآلة	3	2	-	2
7		Science Elective	اختياري علوم	2	2		
Total Hours				19			

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Fourth Year -First Semester							
No	Course Code	Title Course		Credit Hour	Hour Theory		.Lab
		English	Arabic		Lecture	Exercise	
1		Data Analysis and Processing	تحليل البيانات ومعالجتها	3	2	-	2
2		Deep Learning	التعلم العميق	3	2	-	2
3		Entrepreneurship	ريادة الأعمال	2	2	-	-
4		Elective (1)	اختياري (1)	3	2	-	2
5		Graduation Project (1)	مشروع التخرج (1)	3	1	4	-
Total Hours				14			

Fourth Year -Second Semester							
No	Course Code	Title Course		Credit Hour	Hour Theory		.Lab
		English	Arabic		Lecture	Exercise	
1		Computer Vision	الرؤية الحاسوبية	3	2	-	2
2		Elective (2)	اختياري (2)	3	2	-	2
3		Graduation Project (2)	مشروع التخرج (2)	3	1	4	-
Total Hours				9			

//////

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



16. Distribution of Total Credit Hours:

Courses		No of Courses, CH, %	First level		Second level		Third level		Fourth level		Total	%
			1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd		
University Requirements	Compulsory	No. of courses	5	3							8	
		Credit Hours	11	6							17	
		%										
	Electives	No. of courses										
		Credit Hours										
		%										
Faculty Requirements	Compulsory	No. of courses	1			1	1	1	1	1	6	
		Credit Hours	3			2	2	2	3	3	15	
		%										
	Electives	No. of courses										
		Credit Hours										
		%										
Department Requirements	Compulsory	No. of courses	1	2	3	2		1			9	
		Credit Hours	3	6	9	6		3			27	
		%										
	Electives	No. of courses										
		Credit Hours										
		%										
Program Requirements	Compulsory	No. of courses		2	3	4	6	4	3	1	23	
		Credit Hours		6	9	12	18	12	8	3	68	
		%										
	Electives	No. of courses						1	1	1	3	
		Credit Hours						2	3	3	8	
		%										
Field training		No. of courses										
		Credit Hours										
		%										
Research Project		No. of courses										
		Credit Hours										
		%										
Total		No. of courses	7	7	6	7	7	7	5	3	49	
		Credit Hours	17	18	18	20	20	19	14	9	135	
		%100	14.3%	14.3%	12.2%	14.3%	14.3%	14.3%	10.2%	6.1%		
	Level	%100	12.6%	13.3%	13.3%	14.8%	14.8%	14.0%	10.4%	6.7%		

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



17. Admission/Selection/Transfer Requirements:

1. Admissions to the program shall be made according to the admission rules set by the Ministry of Higher Education and Scientific Research and University admission guidelines.
2. General Secondary school certificate (Science Section) or any equivalent certificate with a grade as specified in the admission rules made by the Ministry of Higher Education and Scientific Research.
3. Pass the aptitude test and personal interview.

The Scientific Section decides any requirement for specialization.

18. Graduation Requirements:

1. Student attendance should not be less than 75%
2. Students will graduate after successfully passing all program requirements.
3. Total credit hours for the program are 137 credit hours.
4. The minimum score for any student to pass any credit hours course is 50 degrees.

19. Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 89%	Very Good
From 65% to less than 79%	Good
From 50% to less than 64%	Pass
Less than 50%	Poor/Fail

20. Facilities Required for Running the Program:

1. Lecture Rooms with chairs and tables, data show, Smart Board, etc.
2. Lab with facilities such as chairs and tables, laboratory equipment, hardware and software, data show, Smart Board, etc.
3. Library and study room.
4. Internet

21. Program Assessment:

Type of the Sample who Assess the program		Instruments used	Sample
1	Final year Students	Questionnaire1	100%
2	Graduate Students	Questionnaire2	50%

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



3	Academic staff	Questionnaire3	100%
4	External Evaluator	Feedback&Comments	100%
1	Final year Students	Questionnaire1	100%
2	Graduate Students	Questionnaire2	50%

22. Program Policies:

Based on University Regulations

1.	(Class Attendance) : A student should attend not less than 75 % of total hours of the subject; otherwise he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hours, student will be required to retake the entire course again.
2.	(Tardy) : For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he/she will be considered as absent.
3.	(Exam Attendance/Punctuality) : A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	(Assignments & Projects) : Assignments and projects are given as per course specification; the student has to submit all the assignments for checking on time, mostly one week after given the assignment.
5.	(Cheating) : For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6.	(Plagiarism) : Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7.	(Other policies) : - Mobile phones are not allowed to use during a class lecture. It must be closed; otherwise

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



	the student will be asked to leave the lecture room. - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments might be given directly to students using soft or hard copy.
--	---



Annex- 1, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
Current Program	B.Sc. in Artificial Intelligence	SANA'A	https://su.edu.ye/fcit	Computer & Information Technology	Department of Computer Science	Yemen	BSc			4
The 1 st Program	Bachelor of Artificial Intelligence	Jordan University of Science and Technology	https://www.just.edu.jo/facultiesanddepartments/it/Pages/viewplan.aspx?plananno=602	faculty of Computer and Information Technology	Department of Artificial Intelligence	Jordan	BSc	Jordanian Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI)	2022	4
The 2 nd Program	BSc of science in Artificial Intelligence	Dakota State University	https://catalog.dsu.edu/mime/media/40/922/BS+Artificial+Intelligence+MA+P+23-24+%28002%29.pdf	College of Computer and Cyber Sciences	Department of Computer science	USA	BSc	Dakota State University is accredited by the Higher Learning Commission (HLC), founded in 1895	2021	4
The 3 rd Program	Bachelor of science on Artificial Intelligence	Carnegie Mellon University	https://www.cs.cmu.edu/	School of computer science	Department computer Science	USA	BSc	accredited by the Middle States Commission on Higher Education (MSCHE))	2018	4
The 4 th Program	Bachelor of Science in Artificial Intelligence	Effat university	https://www.effatuniversity.edu.sa/English/academics/Undergraduate/CoE/Pages/cs.aspx	Faculty of Engineering	Department of computer science	KSA	BSc	accredited by the National Commission for Academic Accreditation & Assessment	2020	4

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Rector



Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
								(NCAAA).		
The 5th Program	Bachelor of Science in Artificial Intelligence	American University of Ras Al Khaimah (AURAK)	https://aurak.ac.ac/undergraduate-degrees/computer-science/bachelor-of-science-in-artificial-intelligence#nav-senior_year	School of Engineering	Computer science	United Arab Emirates	BSc	AURAK is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) And Commission for Academic Accreditation (CAA)	2020	4
The 6th Program	Bachelor of Science in Artificial Intelligence	University of Wollongong.	https://courses.uow.edu.au/courses/current/766	College of Engineering and information science	Computer Science	Australia	BSc	Singapore Computer Society (SCS)		3

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Annex- 2, Survey of PILOs for Similar Accredited Programs at National and International Universities

Program PILOs	Similar Accredited Programs						Accreditation Bodies	
	Jordan University of Science and Technology	Dakota State University	Carnegie Mellon University	Effat university	American University of Ras Al Khaimah (AURAK)	University of Wollongong..	NARS	International (if any)
A1	1,2,6		1,2	7,8		1	1	
A2	1,2,6		1,2	7,8		1	1	
B1	1,6	1,2	3,5	1,2	1,2	2,3	2,3,4	
B2	1,6	1,2	3,5	1,2	1,2	2,3	2,3,4	
B3								
C1	3,4	3	4	5,8	2	4,5	5	
C2	3,4	3	4	5,8	2	4,5	5	
D1	3,5	4	6,4	4,3	3,4	4,6	6	
D2	3,5	4	6,4	4,3	3,4	4,6	6	

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Rector

Annex- 3, Survey of Number of Courses and Credit Hours of Similar Programs

University		Sana'a University - Artificial Intelligence		Jordan University of Science and Technology - Bachelor of Artificial Intelligence - https://www.just.edu.jo/faculties/ai/Pages/viewplan.aspx		Australia - Bachelor of Computer Science - https://courses.uow.edu.au/co		Artificial Intelligence Concentration - https://www.effatuuniversity.edu.sa/enol		Australia - Bachelor of Computer Science - https://courses.uow.edu.au/co		Average	
		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses
University Requirements	Compulsory	17	8	16	6	14	7	--	--	--	--	--	--
	Electives	--	--	9	48	9	16	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
Faculty Requirements	Compulsory	15	6	24	10	26	10	--	--	--	--	--	--
	Electives	--	--	0	0	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
Department Requirements	Compulsory	27	9	74	26	--	--	--	--	--	--	--	--
	Electives	--	--	9	17	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Compulsory	68	23	--	--	64	23	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Electives	8	3	--	--	6	13	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%

Head of Department

Quality Unit

Dean of the Faculty

Center of Development & Quality Assurance

Rector



University		Sana'a University - Artificial Intelligence		Jordan University of Science and Technology - Bachelor of Artificial Intelligence – https://www.just.edu.jo/faculties/ai/departments/it/degrees/viewplan.asp		https://au-rak.ac.ae/undergraduate-degrees/c-computer-		https://www.effatuniversity.edu.sa/enol		Australia - Bachelor of Computer Science – https://courses.now.edu.au/course		Average	
Program Requirements	Graduation Project	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Summer Training	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Industrial Training	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Practical Skills	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
Other Courses		--	--	--	--	--	--	--	--	--	--	--	--
Total		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses		

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Annex- 4, Comparison of Program Courses and Similar Programs Courses

#	Current Program	https://www.just.edu.iq/facultiesanddepartments/it/department/ Technology - Bachelor of Artificial Intelligence										https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence+Intelligence Artificial Intelligence										https://www.cs.cmu.edu/bs-in-artificial- Bachelor of Science in Artificial Intelligence										https://www.effatuniversity.edu.sa/en/graduate-science-artificial-intelligence-concentration Science - Artificial Intelligence Concentration										https://aurak.ac.ae/undergraduate-science-artificial-intelligence American University of Ras Al Khaimah - Bachelor of Science in Artificial Intelligence										https://courses.now.edu.au/course/sci Australia - Bachelor of Computer Science –																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	Islamic Culture	2		2	-	-	Islamic Culture	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</

Head of Department

Quality Unit

Dean of the Faculty

Center of Development & Quality Assurance

Rector



#	Current Program	https://www.just.edu.jo/facultiesanddepartments/ibac/show										https://www.technology-bachelorofartificialintelligence.com										https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence+MA										https://www.cs.cmu.edu/bs-in-artificial-										https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligenceconcentration-										https://aurak.ac.ae/undergraduate-science-artificial-intelligence										https://courses.americanuniversityofrasmakhamah-bachelorofscienceinartificialintelligence										https://courses.now.edu.au/courses/bachelorofcomputer-science																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
7	National Culture	2	2	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program					https://www.just.edu.jo/facultiesanddepartments/it/Bachelors.htm				https://www.cs.cmu.edu/bs-in-artificial-intelligence/				https://www.effatuniversity.edu.sa/en/collegeofscience				https://aurak.ac.ae/undergraduate-science-artificial-intelligence-concentration/				https://courses/american-university-of-ras-al-khaimah-bachelor-of-science-in-artificial-intelligence/				https://courses/monongia-australia-bachelor-of-computer-science-https://courses.now.edu.au/course/csc																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Programming																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.jo/facultiesanddepartments/departmentoftechnology-bachelorofartificialintelligence				https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence+MA				https://www.cs.cmu.edu/bs-in-artificial/				https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligenceconcentration-on-graduate-science-artificialintelligence				https://aurak.ac.ae/undergraduate-science-artificialintelligence				https://courses.now.edu.au/courses/bachelorofcomputer-science-in-artificial-intelligence			
		Course Hours				Course Hours				Course Hours				Course Hours				Course Hours				Course Hours			
		C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P
	Fundamentals					Intelligence				Intelligence															
23	Discrete Mathematics	3	2	-	2	Discrete Mathematics	3			Intro to Discrete Math / Discrete Math	3			Discrete Mathematics	3	3		Discrete Mathematics	3						
24	AI and Data Science	3	2	-	2	Data Science	3			Bubbles: Data Science for Human Minds				Data Sciences	3	2	2	Data Science	3						
25	Software engineering	2	2	-	-									Software Engineering	3	2	2	Software Engineering	3			Software Engineering			
26	Human Computer Interaction	3	2	-	2					Human-AI Interaction											Human Computer Interaction				
27	Web Design and Programming	3	2	-	2	Introduction To Web Design	1							Web Application Development	3	2	2				Introduction to Web Technology				
28	Algorithms Design and Analysis	3	-	-	2	Analysis And Design Of Algorithms	3			Algorithms and Optimization	3			Algorithm Analysis	3	2	2	Design and Analysis of Algorithms	3						
29	Artificial	3	2	-	2					Neural Computation															

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.jo/facultiesanddepartments/ibacsci/show										https://www.technology-bachelorofartificialintelligence.com										https://catalog.ogdsu.edu/mime/media/40922/BS+Artificial+Intelligence+MA										https://www.cs.cmu.edu/bs-in-artificial-										https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligenceconcentration-on-										https://aurak.ac.ae/undergraduate-science-artificial-intelligence										https://courses.now.edu.au/courses/courses									
		Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours					Course					Course Hours																								
		C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P	C	H	L	T	P																																			
	Neural Network																																																																						
30	Computer Vision	3	2	-	2	Computer Vision	3								Computer Vision																																																								
31	Computer networks	3	2	-	2										Computer Networks	3	2		2							Data Communications and Computer Networks	3						Networks and Communications																																						
32	Business Intelligence	3	2	-	2	Business Intelligence	3																																																																
33	Computer Programming	3	2	-	2																																																																		
34	Elective (1)	3	2	-	2					Elective																Technical Elective I	3						Elective																																						
35	Operating system	3	2	-	3	Operating Systems	3								Operating Systems	3	2		2							Operating System Fundamentals	3																																												
36	Elective (2)	3	2	-	3					Elective																Technical Elective II	3																																												
37	Science Elective	2	2	-	-																																																																		
38	Natural Language	3	2	-	2	Natural Language	3								Introduction to Natural											Natural Language Processing	3																																												

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.iq/facultiesanddepartments/ibac/show				https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence+Technology-Bachelor+of+Artificial+Intelligence				https://www.cs.cmu.edu/bs-in-artificial-				https://www.effatuniversity.edu.sa/en/academic/graduate-science-artificial-intelligence-concentration				https://aurak.ac.ae/under				https://courses.now.edu.au/courses/c			
		Course Hours				Course Hours				Course Hours				Course Hours				Course Hours				Course Hours			
		C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P	C	L	T	P
	Processing					Processing								Language Processing											
39	Artificial Intelligence Techniques and Applications	3	2	-	2					Artificial Intelligence Tools and Frameworks	3														
40	Project Management	3																				IT Project Management			
41	Data Analysis and Processing	3				Big Data Processing	3															Artificial Intelligence and Big Data			
42	Deep learning	3	2	-	2	Deep Learning	3			Introduction to Deep Learning															
43	Computational Intelligence and optimization Techniques	3	2	-	2	Optimization Algorithms	3																		
44	AI programming	3	2	-	2	Artificial Intelligence Programming	3							Advanced Programming	3	2	2					Fundamental Programming with Python			

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.jo/facultiesanddepartments/departmentofartificialintelligence				https://www.ogdsu.edu/mime/media/40922/BS+Artificial+Intel				https://www.cs.cmu.edu/bs-in-artificial-				https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligenceconcentration				https://aurak.ac.ae/undergraduate-science-artificial-intelligence				https://courses.owen.edu.au/courses/courses/bachelor-of-computer-science				
		Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours			
			C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P
45	Data Mining and Warehousing	3	2	-	-																					
46	Knowledge Base and Expert System	3	2	-	2																					
47	Machine learning	3	2		2	Machine Learning	3			Machine Learning Fundamentals	3			Introduction to Machine Learning				Machine Learning	3							
48	Probability and Statistics	3				Probability & Statistics	3			Intro to Statistics	3			Probability												
49	Information Security	3				Information Security And Privacy	3							Information and Cyber Security	3	2	2					Computing and Cyber Security Fundamentals				
50	Introduction to Robotics	3			2	Robotics	3						Cognitive Robotics / Planning Techniques for Robotics													
51	Big Data	3				Big Data Processing	3															Artificial Intelligence and				

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.iq/facultiesanddepartments/departmentoftechnology-bachelorofartificialintelligence										https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence+MA										https://www.cs.cmu.edu/bs-in-artificial-										https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligence										https://aurak.ac.ae/undergraduate-science-artificial-intelligence-concentration										https://courses.now.edu.au/courses/courses																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P		C	L	T	P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector

[illegible]

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	https://www.just.edu.jo/facultiesanddepartments/departmentofartificialintelligence https://www.technology-bachelorofartificialintelligence.com https://catalog.dsu.edu/mime/media/40922/BS+Artificial+Intelligence https://www.cs.cmu.edu/bs-in-artificial- https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligence https://aurak.ac.ae/undergraduate-science-artificial-intelligence-concentration https://courses.uow.edu.au/courses/courses																														American University of Ras Al Khaimah - Bachelor of Science in Artificial Intelligence										Science - Artificial Intelligence Concentration - https://www.effatuniversity.edu.sa/en/collegeofscienceinartificialintelligence										Bachelor of Science in Artificial Intelligence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Course		Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours			Course	Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
				C	H	L		T	P	C		H	L	T		P	C	H		L	T	P		C	H	L		T	P	C		H	L	T		P	C	H	L	T	P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	IoT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Current Program	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		C H	L	T	P		C H	L	T	P		C H	L	T	P		C H	L	T	P		C H	L	T	P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	system					Systems																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector

[illegible]

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector

[illegible]

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Annex- 5, Coding System

Program

Level

Theme Code

No. of the course in the list

Example: AI401

Program

Level

Theme Code

No. of the course in the list

AI

4

0

1

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours	Prerequisites/ Co-requisites	PILOs
Elective course	1	1	AI Gaming		3		A2,D1,D2
		2	Games Development		3		A2,D1,D2
		3	Business intelligence		3		B2,C2
		4	Automation devices		3		C1,D1
		5	Data warehousing		3		C1,D2
		6	Sentimental analytics		3		C1,D2
		7	Blockchain		3		A1,B1,C2,D1
Total		6			21		

General Courses (Department Requirements)

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours	Prerequisites/ Co-requisites	PILOs
General Courses (Department Requirements)		1	Arabic Language (101)		2		A1
		2	English Language (101)		2		A1
		3	Mathematics (1)		3		A1,A2,B1,C1

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



	4	Programming Fundamentals	3	A1,A2,B1,C1,D2
	5	Islamic Culture	2	A1
	6	Computer Skills	3	A1
	7	Arabic Israeli Conflict	2	A1
	8	Arabic Language (102)	2	A1
	9	English Language(102)	2	A1
	10	Mathematics (2)	3	A1,A2,B1,C1
	11	Discreet Mathematics	3	A1,A2,B1,C1
	12	Artificial Intelligence Fundamentals	3	A1,A2,B1,C1
	13	Computer Programming	3	A1,A2,B1,C1,D2
	14	National Culture	2	A1
	15	Object-Oriented Programming	3	A1,A2,B1,C1,D2
	16	Web Design and Programming	3	A1,A2,B1,C1,D1
	17	Data Structure and Algorithms	3	A1,A2,B2,C1,D1
	18	Probability and Statistics	3	A1,A2,B1,C1
	19	AI Programming	3	A1,A2,B2,C1,D1
	20	Algorithms Design and Analysis	3	A1,A2,B2,C1,D1
	21	Operating Systems	3	A1,A2,B2,C2,D2
	22	Artificial Intelligence Techniques and Applications	3	A1,A2,B2,C1,D1
	23	Database Systems	3	A2,B2,C2,D2
	24	Linear Algebra	3	A1,A2,B1,C1
	25	Computer Networks	3	A1,A2,B2,C1,D1
	26	Communication Skills	2	A1,D1,D2
	27	Data Mining and Warehousing	3	A1,A2,B2,C1,D1
	28	Software Engineering	3	A1,A2,B2,C1,D1
	29	Information Security	3	A1,A2,B2,C1,D1
	30	Research Methodology	2	A1,B2,C1,C2,D2
	31	Human Computer Interaction	3	A1,B1,C2,D2
	32	Computational Intelligence and	3	A1,B2,C2,D1

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



			optimization Techniques				
		33	Artificial Neural Network		3		A1,B2,C2,D1
		34	Project Management		3		A1,A2,B1,C1,D2
		35	Knowledge Base and Expert System		3		A1,B2,C2,D1
		36	Data Analysis and Processing		3		A1,B2,C1,C2,D2
		37	Machine learning		3		A1,A2,B2,C2,D2
		38	Deep learning		3		A1,A2,B2,C2,D2
		39	Elective (1)		3		A1,B1,C1,C2,D2
		40	Elective (2)		3		A1,B1,C1,C2,D2
		41	Professional Ethics		2		A1,D1,D2
		42	Science Elective		2		A1,B1,C1,C2,D2
		43	AI and Data science		3		A1,A2,B2,C2,D1
		44	Graduation Project 1		3		A1,A2,B1,C1,D2
		45	Natural Language Processing		3		A1,A3,B2,C2,D2
		46	Computer vision		3		A1,A2,B2,C2,D2
		47	Graduation Project 2		3		A1,A2,B1,C1,D2
		48	Business Intelligence		3		A1,B2,C2,D1
		49	Entrepreneurship		2		A1,A2,B1,C1,D2
Total							

Annex- 6, Matrix of Mapping Program PILO's with Courses

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



I=Introduced; P=Practiced; M/A=Mastered/Advanced

#	Course Code	Course Title	Program Intended Learning Outcomes (PILOs)											
			A. Knowledge & Understanding			B. Intellectual Skills			C. Practical Skills			D. Transferable Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3
1		Arabic Language (101)	I	I										
2		English Language (101)	I	I										
3		Mathematics (1)	I	I		I			I					
4		Programming Fundamentals	I	I		I								
5		Islamic Culture	I	I										
6		Computer Skills	I	I										
7		Arabic Israeli Conflict	I	I										
8		Arabic Language (102)	I	I										
9		English Language(102)	I	I										
10		Mathematics (2)	A	A		A			A					
11		Discreet Mathematics	A	A		A			A					
12		Artificial Intelligence Fundamentals	I	I		I			I					
13		Computer Programming	I	I		I			I			I		
14		National Culture	I	I										
15		Object-Oriented Programming	P	P		P			P			P		
16		Web Design and Programming	A	A		A			A			A		

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Course Code	Course Title	Program Intended Learning Outcomes (PILOs)											
			A. Knowledge & Understanding			B. Intellectual Skills			C. Practical Skills			D. Transferable Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3
17		Data Structure and Algorithms	I	I		I			I			I		
18		Probability and Statistics	P	P		P			P			P		
19		AI Programming	P	P		P			P					
20		Algorithms Design and Analysis	P	P		P			P			P		
21		Operating Systems	P	P		P			P			P		
22		Artificial Intelligence Techniques and Applications	A	A		A			A			A		
23		Database Systems	A1	A2		A				A			A	
24		Linear Algebra	A	A		A			A			A		
25		Computer Networks		A			A			A			A	
26		Communication Skills	A	A		A				A				
27		Data Mining and Warehousing							P			P		
28		Software Engineering	I									I	I	
29		Information Security	A	A			A		A			A		
30		Research Methodology	P									P	P	
31		Human Computer Interaction	P	P			P		P			P		
32		Computational Intelligence and optimization Techniques	P	P			P		P			P		
33		Artificial Neural Network	P				P		P	P		P		

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



#	Course Code	Course Title	Program Intended Learning Outcomes (PILOs)											
			A. Knowledge & Understanding			B. Intellectual Skills			C. Practical Skills			D. Transferable Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3
34		Project Management	A			A				A			A	
35		Knowledge Base and Expert System	A				A			A		A		
36		Data Analysis and Processing	A	A			A			A			A	
37		Machine learning	A				A			A			A	
38		Deep learning	A	A		A			A				A	
39		Elective (1)	A				A			A			A	
40		Elective (2)	A				A		A	A			A	
41		Science Elective	A	A			A			A			A	
42		AI and Data science	A	A			A			A			A	
43		Graduation Project 1	A	A			A			A			A	
44		Natural Language Processing	A			A			A	A			A	
45		Computer vision	A	A			A			A		A		
46		Graduation Project 2	A	A		A			A				A	
47		Business Intelligence					A			A				
48		Entrepreneurship					A			A			A	
49		Professional Ethics	A	A		A				A				

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector



Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Dr. Abdulrahman Alsabri

Rector

Annex- 7, CVs for the Preparation Committee

Attached separately.

Head of Department Quality Unit Dean of the Faculty Center of Development & Quality Assurance

Rector