Bachelor of Science in Artificial Intelligence

Program Description

The Bachelor of Science in Artificial Intelligence (BSAI) degree program at AURAK is designed to equip learners with an in-depth knowledge of computer science theory and a thorough understanding of artificial intelligence (AI) and data science technologies. Students are exposed to state-of-the-art AI-related methods relevant to knowledge representation and reasoning. Such techniques will enhance human capabilities through automated analysis of complex inputs and facilitate automated decision making. The program includes techniques and topics such as machine learning, computer vision, robotics, data analysis and visualization, natural language processing, and data mining.

The global demand for AI and data science professionals is on the rise due to the integration of the field into most industries. This need is further exacerbated by a worldwide shortage of AI talent.

The Bachelor of Science in Artificial Intelligence is overseen by the School of Engineering and Computing and is designed to satisfy QF Emirates Level 7 requirements.

Program Mission

The mission of the Bachelor of Science in Artificial Intelligence program is to graduate students with the knowledge and skills to enable them to design and develop computer systems and data models using the latest advances in the field and hence become effective leaders capable of utilizing artificial intelligence and data science locally and globally across various domains.

Program Educational Objectives

A few years after earning their degree, our graduates will be:

1. Successful professionals and innovators in theoretical and practical areas of computer science, artificial intelligence, and data science;
2. Engaged in creating a positive technological impact with a sufficient awareness of the ethical, legal, and security issues related to computing, artificial intelligence, and data science; and
3. Equipped with the skills required for professional practice including functioning in teams and communicating effectively.

Program Learning Outcomes

Graduates of the program will have the ability to:

1. Analyze a complex computing problem and to apply principles of computing, artificial intelligence, statistics, and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate computer science or artificial intelligence solutions to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science and artificial intelligence theory and software development fundamentals to produce computing-based solutions.
7. Build, apply, and evaluate data science models to solve problems using theoretical fundamentals.

Degree Requirements

The BS in Artificial Intelligence requires the completion of 128 credits in the following areas:

Area	Credit
University General Education Requirements	32
School of Engineering and Computing Requirements	26
Artificial Intelligence Program Requirements	70 (64 compulsory & 6 technical electives)

General Education Requirements 32 Credits

The program requires completion of the General Education Component. For information relating directly to the General Education requirements, please review the catalog section entitled, "General Education Component." You must speak with your advisor to ensure that the General Education Component requirements are satisfied. **The fifth writing intensive course for the BS in Artificial Intelligence is CSAI 451 Machine Learning Lab.**

Course Code	Title	Credits
ARAB 101 or ARAB 110	Arabic Language and Culture for Non-Native Learners I OR Arabic Language and Culture for Native Arabic Speakers I	3
ENGL 101	Composition **(Writing Intensive)**	3
CSCI 112	Introduction to Computer Programming	3
CSCI 113	Introduction to Computer Programming Lab	1
UNIV 100	University First-Year Transition	1
UNIV 200	Innovation, Entrepreneurship, and Sustainability (**Writing Intensive)**	3
PHIL 100 or ENGL 200	Critical Thinking and Reasoning **(Writing Intensive)** OR Advanced Composition **(Writing Intensive)**	3
MEST 100	Introduction to Islam in World Culture **(Writing Intensive)**	3
UAES 200	Survey of United Arab Emirates Studies	3
MATH 113	Calculus I	3
Gen Ed Course	Social and Behavioral Sciences Course	3
ENVS 102	Sustainability and Human-Environment Relations	3

School of Engineering and Computing Requirements 26 Credits

Course Code	Title	Credits
PHYS 110	University Physics I	3
PHYS 111	University Physics I Lab	1
MATH 114	Calculus II	3
MATH 213	Calculus III	3
PHYS 220	University Physics II	3
PHYS 221	University Physics II Lab	1
MATH 203	Linear Algebra	3
ENGR 200	Engineering Statistics	3
CSAI 390	Internship I	3
CSAI 391	Internship II	3

Artificial Intelligence Program Requirements — 70 Credits

Core Course — **64 Credit Hours**

Course Code	Title	Credits
MATH 225	Discrete Mathematics	3
CSCI 104	Introduction to Computing	3
CSCI 211	Object Oriented Programming	3
CSCI 215	Data Structures and Algorithms	3
CSCI 232	Computer Organization	3
CSAI 350	Introduction to Artificial Intelligence	3
CSCI 315	Design and Analysis of Algorithms	3
CSCI 326	Database Systems	3
CSCI 312	Operating System Fundamentals	3
CSAI 351	Data Science	3
EEEN 331	Digital Systems Design	3
EEEN 332	Digital Systems Design Lab	1
CENG 411	Software Engineering	3
CSCI 415	Introduction to Parallel Programming	3
CSAI 484	Internet of Things System	3
CSAI 450	Machine Learning	3
CSAI 451	Machine Learning Lab (**Writing Intensive)**	1
CSCI 462	Data Communications and Computer Networks	3
CSAI 452	Natural Language Processing	3
CSAI 453	Data Visualization	3
CSAI 490	Professional Software Practice	2
CSCI 492	Senior Design Project I	2
CSCI 493	Senior Design Project II	4

Technical Electives — **6 Credit Hours**

Course Code	Title	Credits
CSCI 450	Information Security and Privacy	3
CSAI 480	Big Data	3
CSAI 481	Computer Vision	3
CSAI 482	Data Mining	3
CSAI 483	Information Retrieval	3
CSAI 485	Introduction to Deep Learning	3
CSCI 416	Human Computer Interaction	3
CENG 431	Embedded Systems	3
CENG 432	Embedded Systems Lab	1
CSAI 486	Special Topics in Artificial Intelligence	3
CSAI 487	Introduction to Robotics	3
ENGR 399	Undergraduate Research Project	3

Bachelor of Science in Artificial Intelligence Four-Year Study Plan

Year 1 Semester 1			Year 1 Semester 2		
Course No.	**Description**	**CR**	**Course No.**	**Description**	**CR**
CSCI 104	Introduction to Computing	3	ARAB 101 Or ARAB 110	Arabic Language and Culture for Non-Native Learners I OR Arabic Language and Culture for Native Arabic Speakers I	3
ENGL 101	Composition	3	CSCI 112	Introduction to Computer Programming	3
MATH 113	Calculus I	3	CSCI 113	Introduction to Computer Programming Lab	1
PHYS 110	University Physics I	3	MATH 114	Calculus II	3
PHYS 111	University Physics I Lab	1	PHYS 220	University Physics II	3
UNIV 100	University First-Year Transition	1	PHYS 221	University Physics II Lab	1
			MEST 100	Introduction to Islam in World Culture	3
Subtotal =		**14**	**Subtotal =**		**17**
Year 2 Semester 1			**Year 2 Semester 2**		
Course No.	**Description**	**CR**	**Course No.**	**Description**	**CR**
CSCI 211	Object Oriented Programming	3	CSCI 215	Data Structures and Algorithms	3
MATH 213	Calculus III	3	EEEN 331	Digital Systems Design	3
MATH 225	Discrete Mathematics	3	EEEN 332	Digital Systems Design Lab	1
CSCI 232	Computer Organization	3	ENGR 200	Engineering Statistics	3
GEN ED	Social and Behavioral Sciences	3	PHIL 100 Or ENGL 200	Critical Thinking and Reasoning or Advanced Composition	3
			MATH 203	Linear Algebra	3
Subtotal=		**15**	**Subtotal=**		**16**
Year 2 Summer Session					
Course No.	**Description**	**CR**			
CSAI 390	Internship I	3			
Year 3 Semester 1			**Year 3 Semester 2**		
Course No.	**Description**	**CR**	**Course No.**	**Description**	**CR**
CSAI 350	Introduction to Artificial Intelligence	3	CSCI 315	Design and Analysis of Algorithms	3
ENVS 102	Sustainability and Human-Environment Relations	3	CSAI 351	Data Science	3
CSCI 312	Operating System Fundamentals	3	CSCI 462	Data Comm. and Computer Networks	3
CSCI 326	Database Systems	3	CSCI 415	Introduction to Parallel Programming	3
UNIV 200	Innovation, Entrepreneurship, and Sustainability	3	UAES 200	Survey of United Arab Emirates Studies	3
Subtotal =		**15**	**Subtotal =**		**15**
Year 3 Summer Session					
Course No.	**Description**	**CR**			
CSAI 391	Internship II	3			
Year 4 Semester 1			**Year 4 Semester 2**		
Course No.	**Description**	**CR**	**Course No.**	**Description**	**CR**
CSAI 450	Machine Learning	3	CSCI 493	Senior Design Project II	4
CSAI 451	Machine Learning Lab	1	CSAI 452	Natural Language Processing	3
CENG 411	Software Engineering	3	CSAI 453	Data Visualization	3
CSCI 492	Senior Design Project I	2	Elective	Technical Elective I	3
CSAI 490	Professional Software Practice	2	Elective	Technical Elective II	3
CSAI 484	Internet of Things System	3			
Subtotal =		**14**	**Subtotal =**		**16**
TOTAL CREDIT HOURS 128					