ARTIFICIAL INTELLIGENCE CONCENTRATION

Computer Science, Bachelor of Science in Computer Science - Artificial Intelligence Concentration Requirements

The Artificial Intelligence concentration is intended to enable students to learn about the principal technologies and methods for programming autonomous behavior on software agents and robots as well as learn about the computational approaches towards solving problems that deemed to require human intelligence. Students will gain knowledge about the reasoning, planning and learning techniques and algorithms used by software agents for natural language understanding, and by robots and game-avatars for problem solving, mobility, and strategic decision making. Taking courses in this track will provide students the essential skills for writing programs for real-world problems that require software programs and robots to mimic human behavior and assist humans in performing complex, risky and tedious tasks. Students will also have an opportunity to participate in national and international AI and game programming competitions and do capstone course projects to explore selective topics in more in-depth manner.

Code	Title	Credits
General Education Requirements - 46 Hours Required		
Minimum of "C-"required		
Fundamental Academic Skills		**15**
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	ENGLISH COMPOSITION II	
Writing in the Discipline		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1100	DATA LITERACY AND VISUALIZATION	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
or STAT 1100	DATA LITERACY AND VISUALIZATION	
or STAT 1530	ELEMENTARY STATISTICS	
Distribution Requirements		**31**
Natural Science - From two disciplines and at least one lab - 7 hrs		
Social Science - From two disciplines - 9 hrs		
Humanities and Fine Arts - From two disciplines - 9 hrs		
Global Diversity - 3 hrs		
US Diversity - 3 hrs		
MAJOR REQUIREMENTS - 91 Hours Required		
**Course will satisfy UNO's General Education requirement		
^Course requires pre-requisite(s)		
All of the following:		**48**
CIST 1400	INTRODUCTION TO COMPUTER SCIENCE I (^)	
CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II (^)	
CIST 2100	ORGANIZATIONS, APPLICATIONS AND TECHNOLOGY (** ^)	
CSCI 2240	INTRODUCTION TO C PROGRAMMING (^)	
CIST 3000	ADVANCED COMPOSITION FOR IS&T (** ^)	
CIST 3110	INFORMATION TECHNOLOGY ETHICS (** ^)	
CSCI 3320	DATA STRUCTURES (^)	
CSCI 3550	COMMUNICATION NETWORKS (^)	
CSCI 3660	THEORY OF COMPUTATION (^)	
CSCI 3710	INTRODUCTION TO DIGITAL DESIGN AND COMPUTER ORGANIZATION (^)	
CSCI 4100	INTRODUCTION TO ALGORITHMS (^)	
CSCI 4220	PRINCIPLES OF PROGRAMMING LANGUAGES (^)	
CSCI 4350	COMPUTER ARCHITECTURE (^)	
CSCI 4500	OPERATING SYSTEMS (^)	
CSCI 4830	INTRODUCTION SOFTWARE ENGINEERING (^)	
CSCI 4970	CAPSTONE PROJECT (^)	
CSCI 4000	ASSESSMENT (^)	
Artificial Intelligence Concentration - 18 Hours		
All of the following:		**6**
CSCI 3450	NATURAL LANGUAGE PROCESSING (^)	
or CSCI 3470	FUNDAMENTALS AND ALGORITHMS OF MACHINE LEARNING	
CSCI 4450	PRINCIPLES OF ARTIFICIAL INTELLIGENCE (^)	
Select 4 courses from the following (at least 2 courses must be 3000 and above):		**12**
PHIL 2010	SYMBOLIC LOGIC	
CSCI 2410	INTRODUCTION TO DATA ANALYTICS USING PYTHON (^)	
CSCI 2510	INTRODUCTION TO GAME PROGRAMMING (^)	
CSCI 2880	INTRODUCTION TO GENERATIVE AI	
CSCI 3470	FUNDAMENTALS AND ALGORITHMS OF MACHINE LEARNING (^) [1]	
or CSCI 3450	NATURAL LANGUAGE PROCESSING	
CSCI 3510	ADVANCED GAME PROGRAMMING (^)	
CSCI 3850	FOUNDATIONS OF WEB SEARCH TECHNOLOGIES (^)	
CSCI 4150	GRAPH THEORY & APPLICATIONS (^)	
CSCI 4250	HUMAN COMPUTER INTERACTION (^)	
CSCI 4470	PATTERN RECOGNITION (^)	
CSCI 4480	ALGORITHMS FOR ROBOTICS (^)	
CSCI 4850	DATABASE MANAGEMENT SYSTEMS (^)	
CSCI 4890	DATA WAREHOUSING AND DATA MINING (^)	
ISQA 4010	BUSINESS INTELLIGENCE (^)	
MATH 4450	INTRODUCTION TO MACHINE LEARNING AND DATA MINING (^)	
Extension Courses - Complete 3 credit hours		**3**
Complete 3 additional hours of upper-level CSCI coursework (3XXX or 4XXX level) not used to meet other degree or concentration requirements.		
Math Courses - All of the following:		**15**

MATH 1950	CALCULUS I (^)	
CSCI 2030	MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (^)	
CSCI 2040	INTRODUCTION TO MATHEMATICAL PROOFS (^)	
MATH 2050	APPLIED LINEAR ALGEBRA (^)	
CIST 2500	INTRODUCTION TO APPLIED STATISTICS FOR IS&T (^)	
Science Courses - Complete 7 credit hours from the following list, representing at least 2 disciplines with a minimum of 1 laboratory course**		**7**
PHYS 1050	INTRODUCTION TO PHYSICS (**)	
PHYS 1054	INTRODUCTION TO PHYSICS LABORATORY (**)	
PHYS 1110	GENERAL PHYSICS I (** ^)	
PHYS 1154	GENERAL PHYSICS LABORATORY I (** ^)	
PHYS 2110	GENERAL PHYSICS I - CALCULUS LEVEL (** ^)	
CHEM 1010	CHEMISTRY IN THE ENVIRONMENT AND SOCIETY (** ^)	
CHEM 1014	CHEMISTRY IN THE ENVIRONMENT AND SOCIETY LABORATORY (** ^)	
CHEM 1140	FUNDAMENTALS OF COLLEGE CHEMISTRY (** ^)	
CHEM 1144	FUNDAMENTALS OF COLLEGE CHEMISTRY LABORATORY (** ^)	
CHEM 1170	GENERAL CHEMISTRY I-II (** ^)	
CHEM 1180	GENERAL CHEMISTRY I (** ^)	
CHEM 1184	GENERAL CHEMISTRY I LABORATORY (** ^)	
BIOL 1450	BIOLOGY I (** ^)	
BMCH 2400	HUMAN PHYSIOLOGY & ANATOMY I (**)	
GEOL 1170	INTRODUCTION TO PHYSICAL GEOLOGY (**)	
GEOL 1100	EARTH SYSTEM SCIENCE (**)	
GEOL 1104	EARTH SYSTEM SCIENCE LAB (**)	
GEOG 1030	OUR DYNAMIC PLANET: INTRODUCTION TO PHYSICAL GEOGRAPHY (**)	
GEOG 1050	HUMAN-ENVIRONMENT GEOGRAPHY (**)	
GEOG 1090	INTRODUCTION TO GEOSPATIAL SCIENCES (**)	
GEOG 3510	METEOROLOGY (**)	
GEOG 3514	INTRODUCTION TO METEOROLOGY LABORATORY (** ^)	
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

[1] CSCI 3450 and CSCI 3470 may only be used once each to meet concentration requirements.