

## Applied Artificial Intelligence

Bachelor of Science | Code: S9520 | 120 credits

**CIP (1101101021)**

**Effective Term: Fall 2024 (2247)**

The Bachelor of Science (BS) degree in Applied Artificial Intelligence (AI) offers a practical approach to using complex fields such as computer vision, natural language processing, and machine learning to transform large datasets into actionable outputs that can be used to increase productivity and operational efficiencies. The program is well-rounded and tailored to meet employers' needs, offering in-depth knowledge of artificial intelligence (AI) tools and their applications, as well as AI process automation and optimization. In addition, students learn to use ethical standards and socially responsible practices in the design and implementation of AI systems.

### GENERAL EDUCATION REQUIREMENTS (36.00 Credits)

Courses require a grade of "C" or higher to satisfy the general education requirement.

#### **COMMUNICATIONS (6.00 credits)**

ENC 1101	English Composition 1 (W)	(3 credits)	Appropriate college placement
ENC 1102	English Composition 2 (W)	(3 credits)	Prerequisite: ENC 1101

#### **ORAL COMMUNICATIONS (3.00 credits)**

Select one course from the following offerings.

ENC 2300	Advanced Composition & Communication (W)	(3 credits)	Prerequisites: ENC 1101, ENC 1102
LIT 2480	Issues in Literature & Culture (W)	(3 credits)	Prerequisite: ENC 1102
SPC 1017	Introduction to Communications (W)	(3 credits)	
SPC 2608	Introduction to Public Speaking (W)	(3 credits)	

#### **HUMANITIES (6.00 credits)**

Select one course from State Core AND one course from MDC Core.

#### **State Core (3.00 credits)**

ARH 1000	Art Appreciation	(3 credits)	
HUM 1020	Introduction to Humanities	(3 credits)	
LIT 2000	Introduction to Literature (W)	(3 credits)	Prerequisite: ENC 1101
MUL 1010	Music Appreciation	(3 credits)	
PHI 2010	Introduction to Philosophy (W)	(3 credits)	
THE 2000	Theatre Appreciation (W)	(3 credits)	

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#### **MDC Core (3.00 credits)**

ARC 2701	History of Architecture 1	(3 credits)	
ARC 2702	History of Architecture 2 (W)	(3 credits)	
ARH 1000	Art Appreciation	(3 credits)	
ARH 2050	Art History 1	(3 credits)	
ARH 2051	Art History 2 (W)	(3 credits)	Prerequisite: ARH 2050
ARH 2740	Cinema Appreciation (W)	(3 credits)	
DAN 2100	Dance Appreciation	(3 credits)	
DAN 2130	Dance History 1 (W)	(3 credits)	
HUM 1020	Introduction to Humanities	(3 credits)	
IND 1100	History of Interiors 1	(3 credits)	
IND 1130	History of Interiors 2 (W)	(3 credits)	
LIT 2000	Introduction to Literature (W)	(3 credits)	Prerequisite: ENC 1101
LIT 2120	A Survey of World Literature 2 (W)	(3 credits)	Prerequisites: ENC 1101, ENC 1102
MUH 2111	Survey of Music History 1	(3 credits)	
MUH 2112	Survey of Music History 2 (W)	(3 credits)	Prerequisite: MUH 2111
MUL 1010	Music Appreciation	(3 credits)	
MUL 2380	Jazz & Popular Music in America (W)	(3 credits)	
PHI 2010	Introduction to Philosophy (W)	(3 credits)	
PHI 2600	Introduction to Ethics (W)	(3 credits)	
THE 2000	Theatre Appreciation (W)	(3 credits)	

**SOCIAL SCIENCES (6.00 credits)**

Select one course from State Core AND one course from MDC Core. To meet the Civic Literacy Competency Requirement for graduation **one course selection should be AMH 2010 or AMH 2020 or POS 2041.**

**State Core (3.00 credits)**

<b>AMH 2010</b>	History of the US to 1877	(3 credits)
<b>AMH 2020</b>	History of the US Since 1877	(3 credits)
ANT 2000	Introduction to Anthropology	(3 credits)
ECO 2013	Principles of Economics (Macro) (W)	(3 credits)
<b>POS 2041</b>	American Federal Government	(3 credits)
PSY 2012	Introduction to Psychology	(3 credits)

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**MDC Core (3.00 credits)**

<b>AMH 2010</b>	History of the US to 1877	(3 credits)
<b>AMH 2020</b>	History of the US Since 1877	(3 credits)
ANT 2000	Introduction to Anthropology	(3 credits)
ANT 2410	Introduction to Cultural Anthropology	(3 credits)
CLP 1006	Psychology of Personal Effectiveness	(3 credits)
DEP2000	Human Growth and Development	(3 credits)
ECO 2013	Principles of Economics (Macro) (W)	(3 credits)
ISS 1120	The Social Environment	(3 credits)
ISS 1161	The Individual in Society	(3 credits)
<b>POS 2041</b>	American Federal Government	(3 credits)
PSY 2012	Introduction to Psychology	(3 credits)
SYG 2000	Introduction to Sociology	(3 credits)
WOH 2012	History of World Civilization to 1789	(3 credits)
WOH 2022	History of World Civilization from 1789	(3 credits)

**NATURAL SCIENCES (6.00 credits)**

Select one course from State Core AND one course from MDC Core. Laboratory courses do not fulfill this area's requirements.

**State Core (3.00 credits)**

AST 1002	Descriptive Astronomy	(3 credits)	
BSC 1005	General Education Biology	(3 credits)	
BSC 2010	Principles of Biology	(3 credits)	Pre/Corequisites: CHM 1045, BSC 2010L
BSC 2085	Human Anatomy and Physiology 1	(3 credits)	Corequisite: BSC 2085L
CHM 1020	General Education Chemistry	(3 credits)	
CHM 1045	General Chemistry and Qualitative Analysis	(3 credits)	Prerequisites: CHM 1025 or a passing score on the CART exam, and MAC 1105 Corequisite: CHM 1045L
ESC 1000	General Education Earth Science	(3 credits)	
EVR 1001	Introduction to Environmental Science	(3 credits)	
GLY 1010	Physical Geology	(3 credits)	
OCE 1001	Introduction to Oceanography	(3 credits)	
PHY 1020	General Education Physics	(3 credits)	
PHY 2048	Physics with Calculus 1	(4 credits)	Prerequisites: HS physics, or PHY 1025, PHY 2053 or departmental approval and MAC 2311; Corequisite: PHY 2048L
PHY 2053	Physics (without Calculus) 1	(3 credits)	Prerequisites: MAC 1114, MAC 1147; Corequisite: PHY 2053L

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**MDC Core (3.00 credits)**

AST 1002	Descriptive Astronomy	(3 credits)	
BOT 1010	Botany	(3 credits)	Corequisite: BOT 1010L
BSC 1005	General Education Biology	(3 credits)	
BSC 1030	Social Issues in Biology	(3 credits)	
BSC 1050	Biology & Environment	(3 credits)	
BSC 1084	Functional Human Anatomy	(3 credits)	
BSC 2010	Principles of Biology	(3 credits)	Pre/Corequisites: CHM 1045, BSC 2010L
BSC 2020	Human Biology: Fund. of Anatomy & Physiology	(3 credits)	
BSC 2085	Human Anatomy and Physiology 1	(3 credits)	Corequisites: BSC 2085L

BSC 2250	Natural History of South Florida	(3 credits)	
ESC 1000	General Education Earth Science	(3 credits)	
EVR 1001	Introduction to Environmental Sciences	(3 credits)	
GLY 1010	Physical Geology	(3 credits)	
HUN 1201	Essentials of Human Nutrition	(3 credits)	
OCB 1010	Introduction to Marine Biology	(3 credits)	
OCE 1001	Introduction to Oceanography	(3 credits)	
PCB 2033	Introduction to Ecology	(3 credits)	Prerequisite: PSC 1515 or BSC 2011
PSC 1121	General Education Physical Science	(3 credits)	Prerequisite: MAT 1033
PSC 1515	Energy in the Natural Environment	(3 credits)	
ZOO 1010	Zoology	(3 credits)	Corequisite: ZOO 1010L
CHM*, GLY*, MET*, OCE*, PHY*			

### **MATHEMATICS (6.00 credits)**

MAC 1105 may be replaced by a higher-level mathematics with prefix MAC\*, MAD\*, MAS\*, or MAP\*.

MAC 1105	College Algebra (C)	(3 credits)	Prerequisite: MAT 1033
STA 2023	Statistical Methods (C)	(3 credits)	Prerequisite: MAT 1033 or MGF 1131

### **GENERAL EDUCATION ELECTIVE (3.00 Credits)**

See Academic Advisor for approved selection.

### **COMPUTER COMPETENCY REQUIREMENT**

Students must satisfy the requirement by successfully completing a course (CGS 1060C or CTS 0050, an equivalent college credit course), or passing MDC's Computer Skills Placement examination, or a test exemption.

### **FOREIGN LANGUAGE COMPETENCY REQUIREMENT**

Students must fulfill this requirement via three options:

**Option A:** Successful completion of two (2) credits (i.e., the equivalent of two years) in one (1) foreign language at the secondary (high school) level.

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**Option B:** Successful completion of the following courses at the elementary 2 level: ASL 1150C, CHI 1121, FRE 1121, GER 1121, ITA 1121, JPN 1121, POR 1121, RUS 1121, SPN 1121. These credits count towards the Lower Division Requirements area.

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**Option C:** Students may demonstrate completion of the elementary 2 level through standardized examination that document the required foreign language competency.

### **LOWER DIVISION TECHNOLOGY (31.00 Credits)**

#### **Group A: 13.00 credits**

CAI 1001C	Artificial Intelligence (AI) Thinking	(3 credits)	
CAI 2100C	Machine Learning Foundations	(3 credits)	Prerequisites: CAI 1001C and COP 1047C
CAI 2300C	Introduction to Natural Language Processing	(3 credits)	Prerequisite: CAI 2100C
COP 1047C	Introduction to Python Programming	(4 credits)	

#### **Group B: 10.00 credits**

CAI 2840C	Introduction to Computer Vision	(3 credits)	Prerequisite: CAI 2100C
COP 2800	Java Programming	(4 credits)	Prerequisites: COP 1047C, COP 1334, or COP 2270
PHI 2680	Artificial Intelligence and Ethics	(3 credits)	

#### **Group C: 8.00 credits**

Any transferrable type-1 or type-2 courses. Please see academic advisor.

### **UPPER DIVISION REQUIREMENTS (35.00 Credits)**

#### **PROGRAM CORE: 31.00 credits**

CAI 3303C	Natural Language Processing	(3 credits)	Prerequisite: CAI 2300C
CAI 3821C	Computational Methods and Applications for Artificial Intelligence 1	(3 credits)	Prerequisites: CAI 2100C, COP 1047C, MAC 1105, and STA 2023
CAI 3822C	Computational Methods and Applications for Artificial Intelligence 2	(3 credits)	Prerequisite: CAI 3821C
CAI 4420C	Applied Decision and Optimization Theory	(3 credits)	Prerequisite: CAI 4505C
CAI 4505C	Artificial Intelligence	(3 credits)	Prerequisites: CAI 3822C and COP 3530
CAI 4510C	Machine Intelligence	(3 credits)	Prerequisites: CAI 3822C and COP 3530
CAI 4525C	Artificial Intelligence Systems Automation	(3 credits)	Prerequisites: CAI 4505C and CAI 4510C
CAI 4830C	Simulation for Applied Artificial Intelligence	(3 credits)	Pre/corequisite: CAI 4505C
CAI 4950C	Artificial Intelligence Capstone	(3 credits)	Prerequisites: CAI 4510C, CAI 4420C and CAI 4830C; Pre/Corequisite: CAI 4525C

COP 3530	Data Structures	(4 credits)	Prerequisite: COP 2800
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**UPPER-DIVISION STATISTICS: 4.00 credits**

Select one course from the following offerings.

CAP 3330	Programming R for Statistics	(4 credits)	Prerequisite: STA 2023
STA 3164	Statistical Methods II	(4 credits)	Prerequisite: STA 2023

**PROGRAM ELECTIVES (18.00 Credits)**

Electives are restricted to courses listed below:

COP*			
MAC*			
MAD*			
MAP*			
CAI 2820C	Artificial Intelligence Applications Solutions	(3 credits)	Prerequisites: CAI 2300C and CAI 2840C
CAP 1788	Introduction to Data Analytics	(4 credits)	
CAP 2761C	Intermediate Analytics	(4 credits)	Prerequisites: CAP 1788 and CGS 1540C
CAP 3321C	Data Wrangling	(4 credits)	Prerequisites: CAP 1788 and CAP 2761C
CAP 4744	Data Visualization	(4 credits)	Prerequisites: CAP 1788 and CAP 2761C
CGS 1540C	Database Concepts and Design	(4 credits)	
CIS 3368	Data Security & Governance	(4 credits)	
CTS 1120	Cybersecurity Fundamentals	(4 credits)	
CTS 1145	Cloud Essentials	(4 credits)	
ETS 1603C	Introduction to Robotics	(4 credits)	
GEB 1432	Applied Artificial Intelligence (AI) in Business	(3 credits)	
HSC 2060	Artificial Intelligence Applications in Healthcare	(3 credits)	
MAD 1100	Discrete Mathematics for Computer Science	(3 credits)	Prerequisite: MAC 1105

\*Includes any and all courses within associated prefix

W = Writing Intensive Course

C = Computational Course

**IMPORTANT INFORMATION**

**Civic Literacy Competency:**

To earn a baccalaureate, students first entering the Florida College System or State University System in the 2021-2022 school year and thereafter must demonstrate competency in civic literacy. This requirement may be satisfied by passing AMH 2010, AMH 2020, or POS 2041 (listed under the Social Sciences core) AND passing an approved assessment. Civic literacy requirements vary for students who entered the College or University system prior to academic year 2021-22. For more information, go to [Civic Literacy Competency](#).

**Computer Competency:** All MDC degree-seeking students with 16 or more credits must demonstrate computer competency prior to graduation. Students demonstrate this competency by passing the MDC computer competency test or by enrolling in and successfully completing an equivalent course. For more information, see [Computer Competency](#).

**Foreign Language:** Students admitted to the baccalaureate degree program without meeting the foreign language admissions requirement of at least 2 courses (8-10 credit hours) of sequential foreign language at the secondary level or the equivalent of such instruction at the postsecondary level must earn such credits prior to graduation. For more information, refer to [Foreign Language Competency](#).

**Required Credit Hours and GPA:** The baccalaureate requires students to earn a minimum of 120 unduplicated credit hours with a minimum cumulative grade point average of 2.0. All general education and all upper division requirements must be passed with the grade of "C" or better.

**Pursuing or Have Earned an Associate's Degree:** Students entering with an AS or AAS degree may have more than 24 elective credits and may need additional General Education credits to meet the 36 General Education credits required for the baccalaureate degree. Students entering with an AA degree may need additional electives to provide appropriate background for the baccalaureate program.

**Graduation Requirements:** Additional requirements may apply, which include, but are not limited to enrollment in courses that involve substantial writing and mathematical skill development (rule 6A-10.030, often referenced as Gordon Rule) and residency (number of credits that must be earned at MDC). Students should review their individualized Degree Audit Report to determine the specific graduation policies in effect for their program of study for their effective term. Students are highly encouraged to meet with their academic advisor on a regular basis and review the College Catalog to learn about all requirements to receive the baccalaureate. The final responsibility for meeting graduation requirements rests with the student.