ARTIFICIAL INTELLIGENCE - MASTER OF SCIENCE (MSAI)

The Master of Science in Artificial Intelligence (MSAI) is a professional degree that prepares engineers, applied scientists and technical professionals for career advancement in advanced technical and technical leadership roles in the rapidly growing field of artificial intelligence engineering. The core curriculum addresses a breadth of areas central to AI engineering expertise including machine learning, statistical learning, data mining and ethics.

The MSAI is offered both residentially on the Boulder campus and online (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/computer-science/artificial-intelligence-master-science-msai-online/) through the Coursera Learning Management System (LMS) platform.

Requirements

Program Requirements

Degree Plan

As a course-based professional MS program, this is considered a Plan II: Non-Thesis program.

Students must complete a total of 30 credit hours of approved graduate-level course work with a grade of C or better and a cumulative GPA of at least 3.00.

Additionally, students must earn a B or better grade in all Breadth Requirement courses and Depth Requirement courses.

Course Requirements

The following requirements are subject to change; for the most current information, visit the department's Professional MS in Artificial Intelligence Degree Program Requirements (https://www.colorado.edu/cs/academics/graduate-programs/professional-masters-artificial-intelligence/ms-ai-degree-requirements/).

Code	Title	Credit Hours
Breadth Requirement		
Breadth requirements are designed to accommodate students from a wide variety of academic backgrounds while ensuring that all students gain a common core of knowledge. Students are recommended to complete the breadth requirement in the first year. All students must earn a B or better in these courses.		
Students must complete the following breadth requirement for a total of 12 credit hours. 3 credit hours will come from three 1-credit hour courses in AI Ethics, AI Toolkits, and AI Professional Skills.		12
CSCI 5622	Machine Learning	
CSCI 5922	Fundamentals of Neural Networks and Deep Learning	
CSCI 5942	AI Engineering: Building, Scaling, and Deploying Large-Scale Models	
Three 1-credit hour courses in AI Ethics, AI Toolkits, and AI Professional Skills		
Depth Requirement		
Students must complete 12 credit hours from the following depth course list. All students must earn a B or better in these courses.		
Choose four:		12
CSCI 5202	Introduction to Robotics	
CSCI 5302	Advanced Robotics	
CSCI 5322	Algorithmic Human-Robot Interaction	
CSCI 5352	Network Analysis and Modeling	
CSCI 5502	Data Mining	
CSCI 5722	Computer Vision	
CSCI 5832	Natural Language Processing	
CSCI 5932	Deep Reinforcement Learning	
CSCI 6414	Information Theory, Statistical Inference, and Experimental Design	
CSCI 6712	Data-Centric Computer Vision	
CSCI 7000	Current Topics in Computer Science (Neuro-Symbolic NLP)	
CSCI 7000	Current Topics in Computer Science (NLP for Cultural Analytics)	
CSCI 7000	Current Topics in Computer Science (Deep Language Understanding)	
CSCI 7000	Current Topics in Computer Science (Systems for Machine Learning)	
CSCI 7000	Current Topics in Computer Science (Geospatial and Statistical Machine Learning)	
CSCI 7000	Current Topics in Computer Science (Vision Language Models for Robotics)	
CSCI 7000	Current Topics in Computer Science (Physical Human-Robot Interaction)	
CSCI 7314	Seminar on Algorithmic Economics and Machine Learning	
APPM 5490	Theory of Machine Learning	
APPM 5720	Open Topics in Applied Mathematics (Convex Optimization)	
ECEN 5672	Digital Image Processing	
ECEN 5772	Digital Video	
Elective Requirement		
Students must complete 6 credit hours in addition to the breadth and depth requirements. Electives are not required to be selected from the depth course list.		
An additional 6 credit hours are required to complete the degree, with restrictions. [1]		6
Total Credit Hours		**30**

[1] Certain courses are not eligible to count to the MSAI degree program. Consult the program website (https://www.colorado.edu/cs/academics/graduate-programs/professional-masters-artificial-intelligence/ms-ai-degree-requirements/) for the most up-to-date information.

Plan(s) of Study

N/A

Learning Outcomes

By the completion of the program, students will be able to:

- Demonstrate an understanding of the mathematical and computational foundations of AI.
- Design state of the art AI techniques to solve problems of relevance to industry and society at large.
- Use existing AI tools and techniques with an expert understanding of the principles behind their design and operation, and advance new AI tools and techniques to push the boundaries of AI.
- Apply AI techniques to diverse areas including healthcare, finance, education, engineering design and government.
- Keep up with the evolution of AI technology and maintain a lifelong professional readiness to adapt with the changing technology landscape.
- Appreciate the ethical implications of AI technology and the potential pitfalls behind specific deployments of AI techniques.