

MS in Artificial Intelligence

The Master of Science in Artificial Intelligence (MS AI) program provides advanced education in the rapidly evolving field of AI, equipping students with the skills to address today's most pressing technological challenges. The program offers a robust curriculum combining foundational knowledge in machine learning, deep learning, and AI with advanced topics like natural language processing, computer vision, and bioinformatics. Students engage in hands-on learning through research projects and interdisciplinary collaborations, fostering innovation and real-world problem-solving. Graduates are well-prepared for high-demand careers as machine learning engineers, data scientists, and AI researchers in industries such as healthcare, finance, and manufacturing. With the global AI market expanding rapidly, graduates also have opportunities for entrepreneurial ventures or further academic pursuits in cutting-edge AI research.

Degree Requirements

Students need to complete at least 30 credit hours of graduate coursework with a grade point average (GPA) of B (3.0) or better as well as the requirements listed below.

- Complete at least 15 credit hours of 8000-level coursework from the list of courses in the program curriculum.
- Complete at least 12 credit hours of foundational courses in the program curriculum.
- A maximum of 6 credit hours may be graduate credits transferred from other MU programs or other institutions. Credit transfer must be recommended by the student's advisor and approved by the program's director of graduate studies and the Graduate School. Transfer credits cannot be used toward the 8000-level coursework requirement.
- A maximum of 15 credit hours used to satisfy the degree requirement of MS in Computer Science (MS CS), MS in Computer Engineering (MS CE), MS in Electrical Engineering (MS EE), PhD in Computer Science (PhD CS), or PhD in Electrical and Computer Engineering (PhD ECE) may be used toward the MS AI degree requirement.

The MS degree has two options: Thesis and Non-Thesis.

- Thesis option: A student must take 3 to 6 credit hours of CMP_SC 8990 and complete a thesis. A student must complete an independent project under a faculty advisor approved by the EECS department. The thesis project is documented in a formal thesis, presented to a faculty committee of at least three graduate faculty members approved by the EECS department and defended in a public defense in a final oral examination.
- Non-Thesis option: A student must take 1 to 3 credit hours of CMP_SC 8980 and complete a substantial independent project under a faculty advisor approved by the EECS department. This project is documented in a report and presented to a faculty committee of at least three graduate faculty members approved by the EECS department in a final oral exam. A manuscript with the student as a co-author with significant contribution that was submitted, accepted, or published in some reputable journals or conferences is acceptable as an alternative to the MS project report.

Foundation Courses (at least 12 credit hours)

CMP_SC 7720	Introduction to Machine Learning and Pattern Recognition	3
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or ECE 7720	Introduction to Machine Learning and Pattern Recognition	
CMP_SC 7750	Artificial Intelligence I	3
or ECE 7750	Artificial Intelligence I	
CMP_SC 7770	Introduction to Computational Intelligence	3
or ECE 7870	Introduction to Computational Intelligence	
CMP_SC 8725	Supervised Learning	3
or ECE 8725	Supervised Learning	
CMP_SC 8735	Unsupervised Learning	3
or ECE 8735	Unsupervised Learning	
CMP_SC 8750	Artificial Intelligence II	3
CMP_SC 8770	Neural Networks	3
or ECE 8890	Neural Networks	
CMP_SC 8001	Advanced Topics in Computer Science (Topic: Deep Learning)	1-4
or ECE 8001	Advanced Topics in Electrical and Computer Engineering	

Elective Courses		
CMP_SC 7010	Computational Methods in Bioinformatics	3
CMP_SC 7540	Neural Models and Machine Learning	3
or ECE 7540	Neural Models and Machine Learning	
CMP_SC 7650	Digital Image Processing	3
or ECE 7655	Digital Image Processing	
CMP_SC 7730	Building Intelligent Robots	4
or ECE 7340	Building Intelligent Robots	
CMP_SC 7740	Interdisciplinary Introduction to Natural Language Processing	3
CMP_SC 7820	Introduction to Digital Signal Processing	3-4
or ECE 7830	Introduction to Digital Signal Processing	
ISE 7410	Data Analytics and Machine Learning for Operations Intelligence	3
ISE 7565	Smart Manufacturing Systems	3
CMP_SC 8085	Problems in Computer Science (at most 3 credit hours)	3
ECE 8010	Supervised Study in Electrical Engineering (at most 3 credit hours)	3
CMP_SC 8130	Computational Genomics	3
CMP_SC 8150	Integrative Methods in Bioinformatics	3
CMP_SC 8180	Machine Learning Methods for Biomedical Informatics	3
CMP_SC 8370	Data Mining and Knowledge Discovery	3
CMP_SC 8580	Machine Learning in Neuroscience	3
or ECE 8580	Machine Learning in Neuroscience	
CMP_SC 8650	Advanced Image Processing	3
or ECE 8855	Advanced Image Processing	
CMP_SC 8675	Biomedical Image Processing	3
or ECE 8675	Biomedical Image Processing	
CMP_SC 8690	Computer Vision	3
or ECE 8690	Computer Vision	
CMP_SC 8740	Advanced Natural Language Processing	3
CMP_SC 8790	Filtering, Tracking and Data Fusion	3
CMP_SC 8810	Advanced Digital Signal Processing	3
or ECE 8810	Advanced Digital Signal Processing	
CMP_SC 8062	Probability and Stochastic Processes for Engineers	3
or ECE 8860	Probability and Stochastic Processes for Engineers	

CMP_SC 8870	Modeling and Management of Uncertainty	3
or ECE 8870	Modeling and Management of Uncertainty	
MAE 8930	Advanced Mechanical System Modeling and Optimization	3
CV_ENG 8106	Advanced Intelligent Transportation Systems	3
Research Courses		
CMP_SC 8980	Research Masters Project in Computer Science	
or ECE 8980	Research-Master Project in Electrical and Computer Engineering	
CMP_SC 8990	Research-Masters Thesis Computer Science	
or ECE 8990	Research-Master Thesis in Electrical and Computer Engineering	