

PhD in Artificial Intelligence

The Doctor of Philosophy in Artificial Intelligence (PhD AI) program offers an advanced, research-focused education in the transformative field of artificial intelligence. AI is revolutionizing industries such as healthcare, technology, and manufacturing, with applications in areas like machine learning, generative AI, natural language processing, and autonomous systems. This program equips students with expertise in core and advanced topics, including deep learning, computer vision, and bioinformatics, while fostering interdisciplinary collaboration and innovation. Students engage in rigorous research under the mentorship of renowned faculty, contributing to groundbreaking advancements that address real-world challenges. Graduates are prepared for high-impact careers as AI scientists, academic researchers, and industry leaders, or for entrepreneurial ventures in cutting-edge AI-driven technologies. With the global AI market expanding rapidly, this program offers unmatched opportunities for professional growth and societal impact.

Degree Requirements

The PhD AI program requires a minimum of 72 credit hours beyond the bachelor's degree. All students completing the PhD must fulfill the following minimum requirements:

- Complete the graduate coursework with a grade point average (GPA) of B (3.0) or better.
- Complete 15 hours of 8000-level coursework from the list of courses (foundational or elective) in the program curriculum, exclusive of research, problems, and independent study experiences.
- Complete 24 hours of 7000- and 8000-level coursework from the list of courses (foundational or elective) in the program curriculum, exclusive of research, problems, and independent study experiences.
- The doctoral committee may recommend that up to 30 hours of post-baccalaureate graduate credit from other programs at MU or a regionally accredited University be transferred toward the total hours required for the doctoral degree. Transfer credits cannot be used toward the 8000-level requirement.
- Pass a qualifying process within two years of program enrollment and pass a comprehensive examination within five years of program enrollment.
- Complete a doctoral dissertation on a topic approved by the doctoral committee. Defend the dissertation in a final oral examination. A doctoral dissertation for satisfying the degree requirement of the PhD in Computer Science (PhD CS) or the PhD in Electrical and Computer Engineering (PhD ECE) cannot be used for satisfying the degree requirement of PhD AI.

Foundation Courses

CMP_SC 7720	Introduction to Machine Learning and Pattern Recognition	3
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 7560	Mathematical Modeling I	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 7565	Smart Manufacturing Systems	3
CMP_SC 8085	Problems in Computer Science (At most 3 credit hours)	1-3
ECE 8010	Supervised Study in Electrical Engineering (At most 3 credit hours)	1-3
CMP_SC 8130	Computational Genomics	3
CMP_SC 8150	Integrative Methods in Bioinformatics	3
CMP_SC 8170	Computational Modeling of Molecular Structures	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 8990	Research-Master Thesis in Electrical and Computer Engineering
CMP_SC 8990	Research-Masters Thesis Computer Science
or ECE 8990	Research-Master Thesis in Electrical and Computer Engineering
CMP_SC 9990	Research-Doctoral Dissertation Computer Science