

# ARTIFICIAL INTELLIGENCE (M.S AND M.ENGR.)

## Master of Science (Thesis-based)

Requires CS 5007 CS and Cyber Research Methods, six thesis credits, and one elective. A faculty member serves as the major professor, and students must form a thesis committee by the completion of required coursework. The thesis consists of a written document, a public oral defense, and a closed examination by the committee.

## Master of Engineering (Non-thesis)

Requires three electives from the approved list and completion of a Graduate Capstone project. The Capstone may be industry-sponsored or research-driven and may be completed individually or in teams.

Code	Title	Hours
<b>Required Courses</b>		
CS 5771	Python for Machine Learning	3
CS 5715	Deep Learning	3
CS 5701	Artificial Intelligence	3
CS 5741	Natural Language Processing (Natural Language Processing)	3
CS 5621 or CS 5622	Data Science Applied Data Science with Python	3
CS 5702	AI Governance, Ethics, and Professional Responsibility	3
<b>Thesis or Non-thesis Option</b>		<b>12</b>
<i>Thesis Option</i>		
CS 5007	CS and Cyber Research Methods (3 cr)	
CS 5000	Master's Research and Thesis (6 cr)	
Select one elective course from the list below (3 cr)		
<i>Non-Thesis Option</i>		
CS 5790	Graduate Capstone	
Select three elective courses from the list below (9 cr)		
<b>Elective courses</b>		
CS 5885	Machine Vision	
CS 5731	Evolutionary Computation	
CS 5727	Adversarial Machine Learning	
CS 5571	AI Data Analysis for Industrial Applications (AI Data Analysis for Manufacturing, Agriculture, and Energy)	
CS 5718	Convex Optimization	
CS 5712	Machine Learning	
CS 5713	Reinforcement Learning	
STAT 5500 or STAT 5551 or STAT 5651 or STAT 5351	Regression Statistical Ecology Computer Intensive Statistics Introduction to Bayesian Statistics	
<b>Total Hours</b>		<b>30</b>

**A total of 30 credits is required for the degree.**

The Master's in AI program is designed to ensure that graduates achieve six defined student learning outcomes:

1. Apply advanced methods in statistics, machine learning, deep learning, and optimization to build and evaluate AI models.
2. Employ AI techniques to solve real-world problems in domains such as natural language processing, computer vision, and cybersecurity.
3. Design and conduct AI projects, including problem definition, model development, testing, and analysis.
4. Evaluate ethical, legal, and governance frameworks and apply them for the responsible use of AI.
5. Communicate AI concepts and results effectively and collaborate as leaders in interdisciplinary teams.
6. Critically assess emerging AI research and tools and integrate them into professional practice.