M.S. Artificial Intelligence

Thesis Option

Course Requirements

Students in the M.S. Artificial Intelligence– Thesis program must complete the following coursework for their Program of Study:

- 33 total credits – minimum
  - 24 graded credits – minimum
    - 18 E_E/CPT_S credits – minimum
    - 6 credits non-graduate (400-level) credits – maximum
    - 6 transferred credits – maximum
    - 3 Directed Study credits (E_E/CPT_S 595) – maximum
    - 9 CPT_S 700 credits – minimum
- Any undergraduate coursework assigned to the student to make up for undergraduate deficiencies at the time of admission may not be used toward the student's degree.

In order to ensure that each student obtains a reasonable graduate-level understanding of a number of fundamental areas, each M.S. Artificial Intelligence – Thesis student must complete the following course requirements with a grade of B- or better:

Core courses (12 credits)

- CPT_S 540 Artificial Intelligence
- CPT_S 570 Machine Learning
- CPT_S 534 Neural Network Design
- **[2] CPT_S 580 AI in the Real-World

Advanced courses (6 credits)

- **[2] CPT_S 580 Reinforcement Learning
- **[2] CPT_S 580 Computer Vision
- **[2] CPT_S 580 Generative AI
- *[1,**2] CPT_S 580 Distributed ML

Electives (6 credits)

- **[2] CPT_S 580 Randomized Algorithms
- CPT_S 571 Computational Genomics
- CPT_S 591 Elements of Network Science
- CPT_S 515 Advanced Algorithms
- CPT_S 516 Algorithmics

- Math 566 Network Optimization
- Math 529 Introduction to Computational Topology
- Math 567 Integer and Combinatorial Optimization
- ME485 – Introduction to Robotics and AI
- EE 582 Convex Optimization
- CPT_S 595 (up to 3 credits max)
- *ENGR 4xx AI for engineers (this course is mandatory for non-CS baccalaureate)
- We plan to add AI+X courses (e.g., AI for Advanced Manufacturing) from other units in VCEA over time.

[1] Courses with an asterisk (*) symbol next to them means their first-offering will be Fall-2026 or later
2 Courses with a double asterisk (**) symbol next to them means their number is temporary and a final number assignment will be given after Faculty Senate approval.

Final Examination – Thesis Defense

The student must file an Application for Degree form with the Graduate School on or before the deadline date specified by the Graduate School; this is an online process and submission.

The final examination should be scheduled after the student has completed all required coursework, applied for the degree, and had their thesis approved by their committee. The scheduling form must be submitted to the Graduate Program Coordinator a minimum of three weeks in advance of the examination date. Note that the student must be enrolled in a minimum of two CPT_S 700 credits during the final exam semester.

If the student's thesis is approved and the oral defense is passed, the student must provide a digital copy of the thesis to the School of EECS. The thesis must be formatted in accordance with University and Graduate School requirements, and all changes suggested by the student's committee must be made in the final version. Students are encouraged to submit the results of the thesis research to a refereed journal.

Non-Thesis Option

Course Requirements

Students in the M.S. Artificial Intelligence – Non-Thesis program must complete the following coursework for their Program of Study:

- **30 total credits – minimum**
  - 26 graded credits – minimum
    - 18 E_E/CPT_S credits – minimum
    - 9 credits non-graduate (400-level) credits – maximum
    - 6 transferred credits – maximum
  - 3 Directed Study credits (E_E/CPT_S 595) – maximum
  - 4 CPT_S 702 credits – minimum

Any undergraduate coursework assigned to the student to make up for undergraduate deficiencies at the time of admission may not be used toward the student's degree.

In order to ensure that each student obtains a reasonable graduate-level understanding of a number of fundamental areas, each M.S. Artificial Intelligence – Non-Thesis student must complete the following course requirements with a grade of B- or better:

Core courses (12 credits)

- CPT_S 540 Artificial Intelligence
- CPT_S 570 Machine Learning
- CPT_S 534 Neural Network Design
- CPT_S 580 AI in the Real-World

Advanced courses (6 credits)

- CPT_S 580 Reinforcement Learning
- CPT_S 580 Computer Vision
- CPT_S 580 Generative AI
- *[2] CPT_S 580 Distributed ML

Electives (6 credits)

- * CPT_S 580 Randomized Algorithms
- CPT_S 571 Computational Genomics
- CPT_S 591 Elements of Network Science
- CPT_S 515 Advanced Algorithms

- CPT_S 516 Algorithmics
- Math 566 Network Optimization
- Math 529 Introduction to Computational Topology
- Math 567 Integer and Combinatorial Optimization
- ME485 – Introduction to Robotics and AI
- EE 582 Convex Optimization
- CPT_S 595 (up to 3 credits max)
- *ENGR 4xx AI for engineers (this course is mandatory for non-CS baccalaureate)

We plan to add AI+X courses (e.g., AI for Advanced Manufacturing) from other units in VCEA over time.

[1] Courses with an asterisk (*) symbol next to them means their first-offering will be Fall-2026 or later
2 Courses with a double asterisk (**) symbol next to them means their number is temporary and a final number assignment will be given after Faculty Senate approval.

Final Examination

The student must file an Application for Degree form with the Graduate School on or before the deadline date specified by the Graduate School; this is an online process and submission.

The final examination should be scheduled after the student has completed all required coursework and applied for the degree. The scheduling form must be submitted to the Graduate Program Coordinator a minimum of three weeks in advance of the examination date. In the case of the written exam detailed below, the scheduling form will denote a Ballot Meeting that the student does not need to attend. Note that the student must be enrolled in a minimum of two CPT_S 702 credits during the final exam semester.

The final exam consists of a portfolio of representational projects from the student's Master's course work, a resume/CV, a LinkedIn profile, and a brief response to an assigned paper. The committee will assign a research paper related to the student's Focus Area(s), together with a specific set of questions. The student will be asked to write a 5-page report (in scientific format) that addresses the questions and submit it to the committee before the date determined on the exam scheduling form. The committee will then grade the entire final exam submission to determine a Pass/Fail grade and forward the signed examination ballots to the Graduate School.