ARTIFICIAL INTELLIGENCE
(M.S. WITH A MAJOR IN INDUSTRIAL AI)

Artificial Intelligence (AI) is an area of study that explores how to endow machines with the ability to learn, make decisions, reason about data, and communicate with humans. In the Wayne State University’s Master of Science in Artificial Intelligence (MSAI) program, students learn to apply problem-solving, creative thinking, algorithmic design, and computer programming skills to build modern AI systems.

Students will gain deep technical training and expertise in a selected concentration area, which include AI Hardware and Systems, AI Algorithm and Systems, and Industrial AI. The program prepares students to (1) work as engineers, consults and entrepreneurs in industries where AI can provide a competitive edge, or (2) pursue a Ph.D. degree in computer science, electrical engineering, industrial and systems engineering, or other related fields.

Applicants must meet requirements for admission to the Graduate School (http://bulletins.wayne.edu/graduate/general-information/admission/). Students must have a bachelor’s degree or the equivalent in Engineering from an accredited college or university. Students from all science, technology, engineering, and math (STEM) disciplines will be considered for admission.

The proposed program requires 30 credits for graduation, either Plan A (24 credits of coursework plus 6 credits of master’s thesis) or Plan C (30 credits of coursework). All courses must be graduate-level courses offered within the College of Engineering. All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the College of Engineering (http://bulletins.wayne.edu/graduate/engineering/engineering/academic-regulations/).

A minimum grade point average of 3.00 for the MSAI program is required to obtain the master’s degree. A maximum of one course in which a C has been received may be used to meet graduation requirements, provided this is offset by sufficient A grades to maintain the required 3.00 average.

The co-advisor for each major, in working with students to develop their academic plan, will determine which electives are appropriate for their major.

Al Hardware and Systems Major

Hosted by the Electrical and Computer Engineering (ECE) department.

Degree Requirements

- 9 credit hours from AI Hardware and Systems core
- 3 credit hours from AI Algorithms and Systems core
- 3 credit hours from Industrial AI core
- Plan A: 9 credit hours from AI Program electives, including at least 6 credit hours from AI Hardware and Systems electives, or
- Plan C: 15 credit hours from AI Program electives, including at least 12 credit hours from AI Hardware and Systems electives
- Plan A: 6 credit hours of ECE 8999 master’s thesis

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECE 5995</td>
<td>Special Topics in Electrical and Computer</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Engineering I *</td>
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Elective courses

- Online and Adaptive Methods for Machine Learning 3
- Analysis and Design of Analog Integrated Circuits 3
- Special Topics in Electrical and Computer Engineering I 3
- Introduction to Digital Image Processing 4
- Discrete Event Systems with Machine Learning 4
- Advanced Digital Image Processing and Applications 4
- Special Topics in Electrical and Computer Engineering II * 3

* Contact an advisor for specific topics that can apply to the AI Hardware and Systems major.

Al Algorithms and Systems Major

Hosted by the Computer Science (CSC) department.

Degree Requirements

- 9 credit hours from AI Algorithms and Systems core
- 3 credit hours from AI Hardware and Systems core
- 3 credit hours from Industrial AI core
- Plan A: 9 credit hours from AI Program electives, including at least 6 credit hours from AI Algorithms and Systems electives, or
- Plan C: 15 credit hours from AI Program electives, including at least 12 credit hours from AI Algorithms and Systems electives
- Plan A: 6 credit hours of CSC 8999 master’s thesis

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<th>Code</th>
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<tr>
<td>CSC 5850</td>
<td>Introduction to Machine Learning and Applications</td>
<td>3</td>
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<tr>
<td>CSC 6800</td>
<td>Artificial Intelligence I</td>
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<tr>
<td>CSC 7760</td>
<td>Deep Learning</td>
<td>3</td>
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Elective courses

- Introduction to Mobility 3
- Principles of Cyber Security 3
- Introduction to Cyber-Physical Systems 3
- Game Programming and Design I 4
- & Game Programming and Design I: Lab 4
- Design of Intelligent Information Retrieval Systems 3
- Intelligent Systems: Algorithms and Tools 3
- Computer Graphics I ** 3
- Special Topics in Computer Science ** 3
- Game Programming and Design II 4
- & Game Programming and Design II: Lab 4
- Database Management Systems I 3
- Digital Image Processing and Analysis 3
- Database Management Systems II 3
- Artificial Intelligence II 3
- Data Mining: Algorithms and Applications 3
- Machine Learning 3
- Advanced Topics in Computer Science (Not repeatable) ** 3
Contact an advisor for specific topics that can apply to the AI Algorithms and Systems major.

**Industrial AI Major**

*Hosted by the Department of Industrial & Systems Engineering (ISE).*

**Degree Requirements**

- 9 credit hours from Industrial AI core
- 3 credit hours from AI Hardware and Systems core
- 3 credit hours from AI Algorithms and Systems AI core
- Plan A: 9 credit hours from AI Program electives, including at least 6 credit hours from Industrial AI electives, or
- Plan C: 15 credit hours from AI Program electives, including at least 12 credit hours from Industrial AI electives
- Plan A: 6 credit hours of IE 8999 master's thesis

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<tr>
<td>IE 5995</td>
<td>Special Topics in Industrial Engineering</td>
<td>3</td>
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<tr>
<td>DSA 6100</td>
<td>Statistical Learning for Data Science and Analytics</td>
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</tr>
<tr>
<td>IE 7860</td>
<td>Intelligent Analytics</td>
<td>3</td>
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** Elective courses**

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<tbody>
<tr>
<td>DSA 6000</td>
<td>Data Science and Analytics</td>
<td>3</td>
</tr>
<tr>
<td>DSA 6200</td>
<td>Operations Research</td>
<td>3</td>
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<tr>
<td>IE 5995</td>
<td>Special Topics in Industrial Engineering</td>
<td>3</td>
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<tr>
<td>IE 6000</td>
<td>Digital Automation</td>
<td>3</td>
</tr>
<tr>
<td>IE 7220</td>
<td>Advanced Statistical Methods</td>
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<td>IE 7445</td>
<td>Manufacturing Analytics</td>
<td>3</td>
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<td>IE 7480</td>
<td>Knowledge-Based Design</td>
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<tr>
<td>IE 7521</td>
<td>Large Scale Optimization and Integer Programming</td>
<td>3</td>
</tr>
<tr>
<td>IE 7995</td>
<td>Graduate Special Topics</td>
<td>3</td>
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*** Contact an advisor for specific topics that can apply to the Industrial AI major.