ELECTRICAL ENGINEERING (NON-THESIS): APPLIED ARTIFICIAL INTELLIGENCE (M.ENG.) (45 CREDITS)

Offered by: Electrical & Computer Engr (Faculty of Engineering)
Degree: Master of Engineering
Program credit weight: 45

Program Description

The Master of Engineering in Electrical Engineering; Non-Thesis-Applied Artificial Intelligence is a professional program of 45 credits. The program provides the foundation for applications of Artificial Intelligence (AI) techniques and experience building an AI system in various fields of interest. The program may be completed on a part-time basis.

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

Required Courses (14 credits)

Expand allContract all

Course	Title	Credits
ECSE 551	Machine Learning for Engineers.	4
ECSE 552	Deep Learning.	4
ECSE 679D1	Project in Applied Artificial Intelligence.	3
ECSE 679D2	Project in Applied Artificial Intelligence.	3

Complementary Courses

(18-24 credits)

Group A: Artificial Intelligence Focused

6-8 credits from the following:

Expand allContract all

Course	Title	Credits
ECSE 526	Artificial Intelligence.	3
ECSE 555	Advanced Topics in Artificial Intelligence.	4
ECSE 556	Machine Learning in Network Biology.	4
ECSE 557	Introduction to Ethics of Intelligent Systems.	3
ECSE 626	Statistical Computer Vision.	4
ECSE 683	Topics in Vision and Robotics.	4

Group B: Mathematical Foundations of Artificial Intelligence

3-4 credits from the following:

Expand allContract all

Course	Title	Credits
COMP 540	Matrix Computations.	4
ECSE 500	Mathematical Foundations of Systems.	3
ECSE 501	Linear Systems.	3
ECSE 507	Optimization and Optimal Control.	3
ECSE 509	Probability and Random Signals 2.	3
ECSE 543	Numerical Methods in Electrical Engineering.	3
ECSE 621	Statistic Detection and Estimation.	4

Group C: Applications of Artificial Intelligence

9-12 credits from the following:

Expand allContract all

Course	Title	Credits
COMP 545	Natural Language Understanding with Deep Learning .	4
COMP 549	Brain-Inspired Artificial Intelligence.	3
COMP 558	Fundamentals of Computer Vision.	4
COMP 565	Machine Learning in Genomics and Healthcare.	4
COMP 579	Reinforcement Learning.	4
COMP 585	Intelligent Software Systems .	4
COMP 588	Probabilistic Graphical Models.	4
COMP 685	Machine Learning Applied to Climate Change.	4
ECSE 506	Stochastic Control and Decision Theory.	3
ECSE 508	Multi-Agent Systems.	3
ECSE 541	Design of Multiprocessor Systems-on-Chip.	3
ECSE 544	Computational Photography.	4
ECSE 546	Advanced Image Synthesis.	4
ECSE 554	Applied Robotics .	4
MECH 559	Engineering Systems Optimization.	3

Elective Courses

(7-13 credits)

7-13 credits at the 500 or 600 level (excluding ECSE 691 to ECSE 697)

* No more that 16 credits in total may be outside the Department. With the exception of courses in the Complementary Courses list, non-departmental courses require Departmental Approval. In exceptional circumstances and with proper justification, students may be permitted to take more than 16 credits of non-Departmental courses; approval from the Graduate Program Director or delegate is required.