

Engineering Faculty Document No. EFD 39-22
January 18, 2022


Memorandum

To: The College of Engineering Faculty**From:** The Elmore Family School of Electrical and Computer Engineering**Re:** new Artificial Intelligence and Machine Learning Concentration for BSEE students.

The faculty of the Elmore Family School of Electrical and Computer Engineering has approved the following new concentration from the College of Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

Description: The Artificial Intelligence and Machine Learning Concentration for BSEE students provides a grounding in the fundamental concepts underlying modern AI and Machine Learning approaches and systems. It covers both the mathematical background as well as programming, and allows students to branch out and draw on courses across the spectrum of AI and ML topics.

Reasons: There is an increasing demand from students for courses in the areas of AI and ML and for credentials that attest to their knowledge. This minor helps give students the fundamentals and the applications of AI/ML techniques.



Milind Kulkarni
Associate Head of Teaching and Learning
Professor of Electrical and Computer Engineering

Concentration in Artificial Intelligence/Machine Learning for the Bachelor of Science in Electrical Engineering

What is the topic focus of the concentration?

The topic focus of this concentration is on AI, ML and Data Science. It mirrors the structure of the AI/ML minor, allowing students taking BSEE degrees to get a credential in this space.

Proposing [Sub]area

This is proposed by Milind Kulkarni, after discussions with faculty in the research areas of AI/ML/DS (broadly construed)

Target Degree

It will apply to the BSEE degree.

Concentration Requirements

Must choose at least 9 hours from the following courses:

- ECE 43800 Digital Signal Processing with Applications (4 credits)
- Either ECE 47300 Introduction to Artificial Intelligence (3 credits) or ECE 57000 Artificial Intelligence (3 credits)
- ECE 49595 Cameras, Imaging, and Statistical Inverse Problems (3 credits)
- Either ECE 49500 Data Mining Basic Concept and Techniques (3 credits) or ECE 59500 Data Mining (3 credits)
- ECE 56900 Introduction to Robotics (3 credits)
- ECE 59500 Deep Learning for Computer Vision (3 credits)
- ECE 59500 Introduction to Deep Learning (3 credits)
- ECE 59500 Machine Learning (3 credits)
- ECE 59500 Natural Language Processing (3 credits)
- With approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning, can include up to 3 hours of:
 - VIP 37920 (2 credits)
 - VIP 47920 (2 credits)
 - ECE 49600 (1-3 credits)