

Engineering Faculty Document No. EFD 12-24
February 29, 2024

Memorandum

To: The College of Engineering Faculty**From:** The Elmore Family School of Electrical and Computer Engineering**Re:** revision to the Artificial Intelligence and Machine Learning Concentration for BSEE

The faculty of the Elmore Family School of Electrical and Computer Engineering has approved the following revisions of the Artificial Intelligence and Machine Learning Concentration for BSEE from the College of Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

FROM:

Concentration Requirements (9 credits)

ECE 43800 - Digital Signal Processing With Applications

ECE 47300 - Introduction To Artificial Intelligence or

ECE 57000 - Artificial Intelligence

ECE 49595 - Selected Topics In Electrical And Computer Engineering (Title: Cameras, Imaging and Statistical Inverse Problems)

ECE 49500 - Selected Topics In Electrical And Computer Engineering (Title: Data Mining Basic Concepts and Techniques) or

ECE 59500 - Selected Topics In Electrical Engineering (Title: Introduction to Data Mining)

ECE 50024 - Machine Learning

ECE 56900 - Introduction To Robotic Systems

ECE 59500 - Selected Topics in Electrical Engineering (Titles: Deep Learning for Computer Vision; Introduction to Deep Learning; Natural Language Processing)

VIP (Vertically Integrated Projects) and ECE 49600 Undergraduate Projects may be taken for a maximum of 3 credits toward the concentration upon approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning.

ECE 49600 – Electrical and Computer Engineering Projects

VIP 37920 - Junior Participation In Vertically Integrated Projects (VIP)

VIP 47920 - Senior Participation In Vertically Integrated Projects (VIP)

TO:

Concentration Requirements (9 credits)

- ECE 40875 - Data Mining Basic Concepts and Techniques or
ECE 59500 – Introduction to Data Mining
- ECE 43800 - Digital Signal Processing with Applications
- ECE 47300 - Introduction To Artificial Intelligence or
ECE 57000 - Artificial Intelligence
- ECE 50024 - Machine Learning
- ECE 56900 - Introduction To Robotic Systems
- ECE 39595/49595/59500 - Selected Topics In Electrical And Computer Engineering
 - ECE 39595 – Data Science Labs Fourier Analysis
 - ECE 39595 – Data Science Labs Probability
 - ECE 49595 - Cameras, Imaging and Statistical Inverse Problems
 - ECE 49595 - Introduction to Reinforcement Learning
 - ECE 49595 - Natural Language Processing
 - ECE 49595 – Undergraduate Computer Vision
 - ECE 59500 - Deep Learning for Computer Vision
 - ECE 59500 - Introduction to Deep Learning
 - ECE 59500 – Natural Language Processing

With approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning, can include up to 3 hours of:

- ECE 49600 – Electrical and Computer Engineering Projects
- VIP 37920 - Junior Participation In Vertically Integrated Projects (VIP)
- VIP 47920 - Senior Participation In Vertically Integrated Projects (VIP)

Reason: The area added a few courses as well as some experimental courses have obtained permanent numbers.



Mithuna Thottethodi
Associate Head of Teaching and Learning
Professor of Electrical and Computer Engineering

Artificial Intelligence and Machine Learning Concentration for Electrical Engineering

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.

Electives (9 credits):

Must complete a minimum of 9 credits from the Elective courses below. VIP (Vertically Integrated Projects) and ECE 49600 Undergraduate Projects may be taken for a maximum of 3 credits toward the concentration upon approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning.

ECE 40875: Data Mining Basic Concepts and Techniques [3 credits] **OR**

ECE 50836 Introduction to Data Mining [3 credits]

ECE 43800: Digital Signal Processing with Applications [4 credits]

ECE 47300: Introduction to Artificial Intelligence [3 credits] **OR**

ECE 57000: Artificial Intelligence

ECE 50024: Machine Learning [3 credits]

ECE 56900: Introduction to Robotic Systems [3 credits]

ECE 39595/49595/59500 – Selected Topics in Electrical Engineering Qualifying Titles:

ECE 39595: Data Sci Labs Fourier Analysis [1 credit]

ECE 39595: Data Sci Labs Probability [1 credit]

ECE 49595: Cameras, Imaging and Statistical Inverse Problems [3 credits]

ECE 49595: Introduction to Reinforcement Learning [3 credits]

ECE 49595: Natural Language Processing [3 credits]

ECE 49595: Undergraduate Computer Vision [3 credits]

ECE 59500: Deep Learning for Computer Vision [3 credits]

ECE 59500: Introduction to Deep 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]

