

◀ MS Comp Engin - Master of Science in Computer Engineering

# **Code Applied Machine Learning and Artificial Intelligence Systems Engineering**

Under Review | Fall 2025

# Proposal Information

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## Workflow Status

In Progress

Refresh  **Form Submission, Proposer**

collapse ▼

Submitted for Approval | Proposer

✓ Francesca Cavallo | 11/15/2024 6:57 AM

## Department Chair Pre-Approval, Electrical & Computer Engineering

Approved | Department Chair

✓ Mark Gilmore | 11/15/2024 9:23 AM

## Registrar Office Technical Check Approval, Registrar Technical Check

Approved | Registrar Technical Check

✓ Michael Raine | 11/20/2024 9:26 AM

— Maggie Sumruld

## College/School Dean Approval, School of Engineering

Approved | College or School approver

✓ Shuang Luan | 11/20/2024 9:31 AM

## Library Approval, Main Campus Library

Approved | Library Approval

✓ Sever Bordeianu | 11/20/2024 11:06 AM

## SGPC Approval, Faculty Senate Graduate and Professional Committee

Approved | Chair

✓ Robben Brown | 2/20/2025 12:41 PM

## FSCC Member notification, Faculty Senate Curriculum Committee

Notification Sent | Faculty Senate Curriculum Committee Member

☒ Antoinette Abeyta

☒ Joe Anderson

☒ Randi Archuleta

☒ Laura Belmonte

☒ Justin Bendell

☒ Isabella Goss

☒ Sara Ice

☒ Megan Jacobs

☒ Joan Lucas

☒ Justine Ponce

☒ Mary Rice

☒ John Russell

☒ Jennifer Schneider

☒ Julia So

☒ SueNoell Stone

☒ Jonathan Wheeler

## Faculty Senate Curriculum Committee Approval, Faculty Senate Curriculum Committee

Approved | Faculty Senate Curriculum Committee Chair

— Janet Vassilev

✓ Nicole Capehart

FSCC approved this.

3/31/2025 9:06 PM

**Provost Approval, Main Campus Provost**

Approved | Provost

✓ Pamela Cheek | 4/15/2025 1:52 PM

**Faculty Senate, Faculty Senate**

Waiting for Approval | Faculty Senate Approval

Nancy Middlebrook  
Theresa Sherman

**Registrar Office Final Approval/Processing, Registrar**

Approval | Registrar final approval

Michael Raine  
Maggie Sumruld

**Notification, Proposer**

Notification | Proposer

Francesca Cavallo

**EMRT notification, EMRT users**

Notification | EMRT user

Enrollment Mgt Reporting Team

**Lobotrax notification, LoboTrax Team**

Notification | LoboTrax Staff

Sherri DeLeve  
Paula Freitag  
Hannah Epstein  
Allie Martinez  
Glenda Johnson

## Proposal Information

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**Sponsoring faculty/staff member ⓘ**

Francesca Cavallo

**Sponsoring faculty/staff email**

fcavallo@unm.edu

**College**

School of Engineering

**Department**

Electrical & Computer  
Engineering

**Campus**

Main Campus

## Effective Term and Year

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**Proposed Effective Term and Year**

Fall 2025

# Justification

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## Concentration Justification

The proposed online concentration aims to educate new generations of engineers to develop Machine Learning (ML) and Artificial Intelligence (AI) systems and apply them responsibly to address societal needs. Establishing this concentration is timely as there is a rapidly increasing demand for engineered ML and AI solutions to transform human life and benefit society. Within the Department of Electrical and Computer Engineering, several faculty members have already supervised the M.Sc. Theses and Ph.D. dissertations that use or actively develop Machine Learning and AI technologies. Several of our graduate students in Space Systems Engineering have specifically cited our Machine Learning and AI courses in helping them select our graduate programs. As further evidence of the strong demand, our Machine Learning course (ECE 517) has consistently had one of the highest graduate student enrolments within ECE. Yet, no single concentration is focused on Machine Learning and AI within the Department of Electrical and Computer Engineering (ECE).

# Associated Forms

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Select any associated course forms that exist

Select any associated program forms that exist

# Program Information

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## Degree Name

MS Comp Engin - Master of Science in Computer Engineering

## Degree Type

Master of Science

## Program Type

Graduate

## Program Description

No Parent Selected

## Degree Hours

31

## Minimum Major Hours

## Degree Requirements

- Complete 1 of the following

### Plan I (Thesis)

- Complete all of the following
  - Earn at least 15 credits from the following types of courses:  
Among the required courses (a minimum of 15 credit hours in ECE), there must be four courses specified by the area of focus chosen by the student.
  - Earn at least 6 credits from the following:
    - ECE599 - Master's Thesis (1 - 6)

- Candidates for the Plan I M.S. must satisfactorily pass the thesis defense.
- Earn at least 10 credits from the following types of courses:  
electives approved by advisor to reach required 31 total credits for degree.

#### **Plan III (Coursework only)**

- Complete all of the following
  - Earn at least 15 credits from the following types of courses:  
Among the required courses (a minimum of 15 credit hours in ECE), there must be four courses specified by the area of focus chosen by the student.
  - Earn at least 16 credits from the following types of courses:  
electives approved by advisor to reach required 31 total credits for degree.

## **Grand Total Credits: 31**

## **Concentration Information**

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### **Concentration Title**

Applied Machine Learning and Artificial Intelligence Systems Engineering

### **Program Level**

Graduate

### **Concentration Requirements**

- Complete all of the following
  - Complete the following:
    - ECE517 - Machine Learning (3)
    - ECE533 - Digital Image Processing (3)
    - ECE510 - Deep Learning (3)
  - Earn at least 1 credits from the following:
    - ECE590 - Graduate Seminar (1)
  - Earned between 3 and 6 credits from the following:
    - ECE551 - Problems (1 - 6)
  - Completed between 15 and 18 credits from the following types of courses:  
Courses listed as electives under the Internet of Things and Space Systems Engineering tab on the UNM Online website or other electives approved by the faculty advisor.

## **Grand Total Credits: 28 - 34**

### **Concentration Description**

The M.S. in Computer Engineering with a concentration in Applied Machine Learning and Artificial Intelligence (AI) Systems Engineering is an Accelerated Online Program based on Plan III requirements as defined in the Graduate Program section of this Catalog. The concentration requires a set of core and elective courses for a total of 31 credit hours. The Applied Machine Learning and AI Systems Engineering concentration covers foundational concepts for developing machine learning and AI systems to address societal needs. The students will be introduced to the mathematical foundations of machine learning systems and deep learning methods. In addition, students will cover selected applications of machine learning and AI

techniques, such as for processing digital images and videos. Emphasis will be placed on project-based learning.