

◀ PhD Cmptr Elec Engr - Doctor of Philosophy in Engineering

CON Cmptr Engr Computer Engineering

Under Review | Fall 2025

Proposal Information

Status

Active

Workflow Status

In Progress

Refresh  **Form Submission, Proposer**

collapse ▼

Submitted for Approval | Proposer

✓ Francesca Cavallo | 3/29/2024 6:58 AM

Department Chair Pre-Approval, Electrical & Computer Engineering

Approved | Department Chair

✓ Mark Gilmore | 3/29/2024 7:10 AM

Registrar Office Technical Check Approval, Registrar Technical Check

Approved | Registrar Technical Check

✓ Michael Raine | 3/29/2024 1:52 PM

College/School Dean Approval, School of Engineering

Approved | College or School approver

✓ Charles Fleddermann | 3/29/2024 2:00 PM

Library Approval, Main Campus Library

Approved | Library Approval

✓ Sever Bordeianu | 3/30/2024 7:51 AM

SGPC Approval, Faculty Senate Graduate and Professional Committee

Approved | Chair

✓ Robben Brown | 9/06/2024 11:59 AM

FSCC Member notification, Faculty Senate Curriculum Committee

Notification Sent | Faculty Senate Curriculum Committee Member

- ☒ John Russell
- ☒ Gabriel Pacyniak
- ☒ Jonathan Wheeler
- ☒ Min Ro
- ☒ Randi Archuleta
- ☒ Stephanie Hands
- ☒ Laura Soito
- ☒ Robben Brown
- ☒ Megan Jacobs
- ☒ Justine Ponce
- ☒ Joe Anderson
- ☒ Jennifer Schneider
- ☒ Yiliang Zhu
- ☒ Nicole Capehart
- ☒ Kate Cartwright
- ☒ Julia So
- ☒ Antoinette Abeyta
- ☒ Joseph Poole Jr MSN, RN, CNE
- ☒ SueNoell Stone

Faculty Senate Curriculum Committee Approval, Faculty Senate Curriculum Committee

Approved | Faculty Senate Curriculum Committee Chair

✓ Janet Vassilev

Approved per FSCC vote 10/18/24.

10/25/2024 2:33 PM

Provost Approval, Main Campus Provost

Approved | Provost

✓ Pamela Cheek | 10/27/2024 8:41 AM

Faculty Senate, Faculty Senate

Waiting for Approval | Faculty Senate Approval

Nancy Middlebrook

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

Changes

- Concentration Requirements
- participants
- Proposed Effective Term and Year
- Catalog Activation Date
- Concentration Justification
- Concentration Description
- Sponsoring faculty/staff member
- Sponsoring faculty/staff email

Collapse ^

Proposal Information

| | |
|--|---------------------------------------|
| Proposed | Proposed |
| Sponsoring faculty/staff member ⓘ | Sponsoring faculty/staff email |
| Francesca Cavallo | fcavallo@unm.edu |
| Existing | Existing |
| Sponsoring faculty/staff member ⓘ | Sponsoring faculty/staff email |

| | | |
|-----------------------|-----------------------------------|---------------|
| College | Department | Campus |
| School of Engineering | Electrical & Computer Engineering | Main Campus |

Effective Term and Year

| |
|---|
| Proposed |
| Proposed Effective Term and Year |
| Fall 2025 |
| Existing |
| Proposed Effective Term and Year |

Fall 2006

Justification

Proposed

Concentration Justification

The concentration has moved to a model where graduate students are allowed to tailor their specialization in consultation with their faculty advisor. Students are required to select core courses from a large pool of courses. The proposed changes reflect the new model.

Existing

Concentration Justification

Associated Forms

Select any associated course forms that exist

Select any associated program forms that exist

Program Information

Degree Name

PhD Cmptr Elec Engr - Doctor of Philosophy in Engineering

Degree Type

Doctor of Philosophy

Program Type

Doctoral

Program Description

No Parent Selected

Degree Hours

66

Minimum Major Hours

Degree Requirements

- Complete all of the following
 - Earn at least 48 credits from the following types of courses:

The minimum amount of coursework required for the Doctor of Philosophy degree is 24 credit hours beyond the master's degree or 48 credit hours beyond the bachelor's degree. This requirement is exclusive of dissertation or master's thesis. These are minimum requirements; ordinarily, more than the 48 credit hours are necessary. The program of each student is an individual matter planned by the committee on studies.
 - See Concentration below for specific requirements.

Grand Total Credits: 48

Concentration Information

Concentration Title

Computer Engineering

Program Level

Graduate

Concentration Requirements

- **Complete all of the following**

- **Emphasis Requirements**

- Complete 1 of the following

- **Choose 1 Emphasis**

- Complete all of the following

- Complete 1 of the following

- **Bioengineering with CompE**

- Complete all of the following

- **Complete at least 2 of the following:**

- ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)
 - ECE537 - Foundations of Computing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE549 - Information Theory and Coding (3)

- **Complete at least 1 of the following:**

- ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

- **Computer Architecture & VLSI Design**

- Complete all of the following

- **Complete at least 2 of the following:**

- ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)
 - ECE537 - Foundations of Computing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE549 - Information Theory and Coding (3)

- **Complete at least 1 of the following:**

- ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

- **Computer Systems and Networks**

- Complete all of the following

- **Complete at least 2 of the following:**

- ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)

- ECE537 - Foundations of Computing (3)
- ECE538 - Advanced Computer Architecture (3)
- ECE540 - Advanced Networking Topics (3)
- ECE549 - Information Theory and Coding (3)
- Complete at least 1 of the following:
 - ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

Computer Vision and Image Processing

- Complete all of the following
 - Complete at least 2 of the following:
 - ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)
 - ECE537 - Foundations of Computing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE549 - Information Theory and Coding (3)
 - Complete at least 1 of the following:
 - ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

Information Systems

- Complete all of the following
 - Complete at least 2 of the following:
 - ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)
 - ECE537 - Foundations of Computing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE549 - Information Theory and Coding (3)
 - Complete at least 1 of the following:
 - ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

Internet of Things

- Complete all of the following
 - Complete at least 2 of the following:
 - ECE516 - Computer Vision (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE524 - Network Economics (3)
 - ECE525 - Hardware-Oriented Security and Trust (3)
 - ECE533 - Digital Image Processing (3)
 - ECE537 - Foundations of Computing (3)
 - ECE538 - Advanced Computer Architecture (3)

- ECE540 - Advanced Networking Topics (3)
- ECE549 - Information Theory and Coding (3)
- Complete at least 1 of the following:
 - ECE506 - Optimization Theory (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

Requirements for all Emphases

- Complete all of the following
 - Earn at least 3 credits from the following types of courses:
Another Computer Engineering concentration emphasis
 - Earn at least 36 credits from the following:
 - CHEM567 - Topics in Physical Chemistry (3)
 - CHEM587 - Advanced Topics in Biological Chemistry (3)
 - ECE506 - Optimization Theory (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE533 - Digital Image Processing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)
 - ECE549 - Information Theory and Coding (3)
 - MATH471 - Introduction to Scientific Computing (3)
 - MATH514 - Applied Matrix Theory (3)
 - PHYS566 - Quantum Optics (3)
 - PHYS571 - Quantum Computation (3)
 - PHYS572 - Quantum Information Theory (3)
 - PHYS581 - Advanced Topics in Physics and Astrophysics (3)

Or Choose Emphasis

Quantum Information Science

- Complete all of the following
 - Complete the following:
 - ECE537 - Foundations of Computing (3)
 - ECE545 - Introduction to Quantum Information Science (3)
 - ECE547 - Quantum Error Correction (3)
 - Complete at least 1 of the following:
 - CHEM567 - Topics in Physical Chemistry (3)
 - PHYS566 - Quantum Optics (3)
 - PHYS571 - Quantum Computation (3)
 - PHYS572 - Quantum Information Theory (3)
 - PHYS581 - Advanced Topics in Physics and Astrophysics (3)
 - Earn at least 3 credits from the following types of courses:
Another Computer Engineering concentration emphasis
 - Earn at least 33 credits from the following:
 - CHEM567 - Topics in Physical Chemistry (3)
 - CHEM587 - Advanced Topics in Biological Chemistry (3)
 - ECE506 - Optimization Theory (3)
 - ECE517 - Machine Learning (3)
 - ECE520 - VLSI Design (3)
 - ECE522 - Hardware Software Codesign with FPGAs (3)
 - ECE533 - Digital Image Processing (3)
 - ECE538 - Advanced Computer Architecture (3)
 - ECE539 - Digital Signal Processing (3)
 - ECE540 - Advanced Networking Topics (3)
 - ECE541 - Probability Theory and Stochastic Processes (3)
 - ECE542 - Digital Communication Theory (3)

- ECE549 - Information Theory and Coding (3)
- MATH471 - Introduction to Scientific Computing (3)
- MATH514 - Applied Matrix Theory (3)
- PHYS566 - Quantum Optics (3)
- PHYS571 - Quantum Computation (3)
- PHYS572 - Quantum Information Theory (3)
- PHYS581 - Advanced Topics in Physics and Astrophysics (3)

◦ Earn at least 2 credits from the following:

- ECE590 - Graduate Seminar (1)

Grand Total Credits: 50

Proposed

Concentration Description

In addition to the general University doctoral degree requirements listed in the Graduate Program section of this Catalog, students pursuing the Doctor of Philosophy (Ph.D.) concentration in Computer Engineering must choose an area of emphasis in the concentration. No more than 16 credit hours of problem courses (ECE 551 or 651) may apply toward the Ph.D. Contact the department for more information about this concentration.

Existing

Concentration Description

Contact the department for more information about this concentration.