ELECTRICAL ENGINEERING - MASTER OF SCIENCE IN ELECTRICAL ENGINEERING (ONLINE)

Requirements and Options for the MSEE degree

The Program Educational Objectives for the Master of Science in Electrical Engineering are:

1. That graduates successfully apply advanced skills and techniques in one or more areas of emphasis.
2. That graduates obtain relevant, productive employment with the private sector or in government and/or pursue additional advanced degrees.

Note--the following degree requirement tables outline the **minimum** requirements for an MSEE. As many students must register for a minimum of 9 credits each semester to remain full time, a student will often take more than the minimum of 6 credits of E E 599 Master's Thesis or 3 credits of E E 598 Master's Technical Report to complete their degree. All students in the MEEE program who receive support as GAs are expected to take 9 credits of coursework toward the MEEE degree each semester, excepting in their final academic semester by filing a request for waiver permitting them to take less than 9 credits, but not less than 1 credit.

Thesis Option:

Prefix	Title	Credits
Graduate Core Courses (choose 2-3 from 2-3 different areas) [1]		**6-10**
Microelectronics/VLSI		
E E 523	Analog VLSI Design	
Photonics/Optics		
E E 528	Fundamentals of Photonics	
Electric Energy Systems		
E E 543	Power System Faults and Stability	
Digital Signal Processing		
E E 545	Digital Signal Processing II	
or E E 596	Digital Image Processing	
Computer Engineering		
E E 562	Computer Systems Architecture	
Communications		
E E 571	Random Signal Analysis	
Controls & Robotics		
E E 551	Control Systems Synthesis	
Graduate Breadth Elective (choose 1-0 courses) from a third area [1]		**4-0**
Electromagnetics		
E E 541	Antennas and Radiation	
Microelectronics/VLSI		
E E 512	ASIC Design	
Electric Energy Systems		
E E 537	Power Electronics	
Digital Signal Processing		
E E 565	Machine Learning I	
E E 587	Deep Learning for Image Processing	
E E 588	Advanced Image Processing	
E E 598	Master's Technical Report	
Communications		
E E 581	Digital Communication Systems I	
Controls & Robotics		
E E 576	Geometric Algebra	
Graduate Electives [2]		**13-15**
Master's Thesis		
E E 599	Master's Thesis	
Complete and defend master's thesis [3]		
Total Credits		**30**

1. Students must take at least two core courses from two different areas of emphasis. In addition, either a third graduate core course OR one graduate breadth elective must be taken from a third area of emphasis. Students pursuing the MSEE who wish to pursue the Ph.D. in the future are encouraged to select three courses from the graduate core courses to satisfy one of the requirements for the Ph.D. Qualifying exam (see https://ece.nmsu.edu/grad-study/phd-qualifying.html) for more information.
2. E E courses must be at the 500 level or higher. Non-E E courses must be at the 450 level or higher. The total number of E E credits, including the graduate core and/or graduate breadth electives and excluding credits of E E 599 Master's Thesis must be at least 12. Credits of E E 590 Selected Topics which are not subtitled are limited to a total of 6.
3. The thesis must be completed and orally defended.

Other limitations and requirements that apply to all master's degrees are described elsewhere in this catalog.

Technical Report Option:

Prefix	Title	Credits
Graduate Core Courses (choose 2-3 from 2-3 different areas) [1]		**6-10**
Microelectronics/VLSI		
E E 523	Analog VLSI Design	
Photonics/Optics		
E E 528	Fundamentals of Photonics	
Electric Energy Systems		
E E 543	Power System Faults and Stability	
Digital Signal Processing		
E E 545	Digital Signal Processing II	
or E E 596	Digital Image Processing	
Computer Engineering		
E E 562	Computer Systems Architecture	
Communications		
E E 571	Random Signal Analysis	
Controls & Robotics		
E E 551	Control Systems Synthesis	
Graduate Breadth Elective (choose 1-0 courses from a third area [1]		**4-0**
Electromagnetics		
E E 541	Antennas and Radiation	
Microelectronics/VLSI		
E E 512	ASIC Design	
Electric Energy Systems		
E E 537	Power Electronics	
Digital Signal Processing		

E E 565	Machine Learning I	
E E 587	Deep Learning for Image Processing	
E E 588	Advanced Image Processing	
E E 597	Neural Signal Processing	
Communications		
E E 581	Digital Communication Systems I	
Controls & Robotics		
E E 576	Geometric Algebra	
Graduate Electives [2]		**16-18**
Master's Technical Report		
E E 598	Master's Technical Report	
Complete and defend master's technical report [3]		
Total Credits		**30**

1 Students must take at least two core courses from two different areas of emphasis. In addition, either a third graduate core course OR one graduate breadth elective must be taken from a third area of emphasis. Students pursuing the MSEE who wish to pursue the Ph.D. in the future are encouraged to select three courses from the graduate core courses to satisfy one of the requirements for the Ph.D. Qualifying exam (see https://ece.nmsu.edu/grad-study/phd-qualifying.html) for more information.

2 E E courses must be at the 500 level or higher. Non-E E courses must be at the 450 level or higher. The total number of E E credits, including the graduate core and/or graduate breadth electives and excluding credits of E E 598 Master's Technical Report must be at least 12. Credits of E E 590 Selected Topics which are not subtitled are limited to a total of 6.

3 The technical report must be completed and orally defended.

Other limitations and requirements that apply to all master's degrees are described elsewhere in this catalog.

Included Prefixes

Graduate course work credits from the following prefixes are permitted for the MSEE degree. If a graduate course outside this list of prefixes logically fits into the MSEE program, see your graduate advisor about requesting an exception; note that exceptions must be approved before taking the class..

Prefix	Title	Credits
College of Agriculture/Consumer/Environmental Sciences		
AEEC		
ENVS		
GENE		
College of Arts and Sciences		
ASTR		
BCHE		
BIOL		
CSCI		
CHEM		
GEOL		
GPHY		
LING		
MATH		
MOLB		
PHYS		
STAT		
College of Business		
ECON		
MGMT		
College of Engineering		
A E		
A EN		
CHME		
E E		
ENVE		
I E		
M E		
SUR		

New Mexico State University master's accelerated program provides the opportunity for academically qualified undergraduate students to begin working on a master's degree during their junior and senior years while completing a bachelor's degree. Typically, a bachelor's degree requires four years to complete, and a master's degree requires an additional two years. The master's accelerated programs allow students the opportunity to complete a graduate program in an accelerated manner. Students can take up to 12 credits of E E graduate courses and get dual course credit that can be applied to both an undergraduate and master's degree. You can also check NMSU's catalog for additional information about our programs.

MAP Requirements

Please see further information about the MAP program on the graduate school website at https://gradschool.nmsu.edu/current-students/masters-accelerated-program.html

Accepted MAP Courses

The following courses are accepted for use in the MAP program. Any other E E 500 level course that is taught concurrently with an E E 400 level course may be considered after a consultation with an advisor. E E 450 level courses are not eligible for MAP credit nor are E E 500 level courses that are not taught concurrently with an E E 400 level course. The following course list specifies which undergraduate BSEE concentration electives may count toward the MAP. Courses are listed according to the most relevant BSEE concentration, but some courses may count toward multiple concentrations; please refer to the corresponding BSEE concentrations in the NMSU catalog for more details on concentration courses.

Prefix	Title	Credits
Artificial Intelligence, Machine Learning, & Data Science		
E E 506	Quantum Computing	3
E E 565	Machine Learning I	3
Communications and Signal Processing		
E E 545	Digital Signal Processing II	3
E E 571	Random Signal Analysis	3
E E 572	Modern Coding Theory	3
E E 573	Signal Compression	3
E E 581	Digital Communication Systems I	3
E E 583	Wireless Communications	3
E E 586	Information Theory	3
E E 587	Deep Learning for Image Processing	3
E E 588	Advanced Image Processing	3
E E 596	Digital Image Processing	3
E E 597	Neural Signal Processing	3
Computers and Microelectronics		

E E 510	Introduction to Analog and Digital VLSI	3
E E 512	ASIC Design	3
E E 523	Analog VLSI Design	3
E E 556	Hardware & Software Codesign	3
E E 558	Hardware Security and Trust	3
E E 562	Computer Systems Architecture	3
E E 563	Computer Performance Analysis I	3
E E 564	Architectural Concepts II	3
E E 567	ARM SOC Design	3
Controls & Robotics		
E E 551	Control Systems Synthesis	3
E E 576	Geometric Algebra	3
Electromagnetics and Photonics		
E E 521	Microwave Engineering	3
E E 528	Fundamentals of Photonics	4
E E 541	Antennas and Radiation	4
E E 548	Introduction to Radar	3
E E 549	Smart Antennas	3
E E 577	Fourier Methods in Electro-Optics	3
E E 578	Optical System Design	3
Power		
E E 502	Electricity Markets	3
E E 503	Numerical Computational Methods for Smart Grid	3
E E 504	Smart Grid Technologies	3
E E 505	Application of Optimization Techniques in Power Systems	3
E E 507	Data Analytics and AI for the Smart Grid	3
E E 533	Power System Operation	3
E E 534	Power System Relaying	3
E E 537	Power Electronics	3
E E 540	Photovoltaic Devices and Systems	3
E E 537	Power Electronics	3
E E 540	Photovoltaic Devices and Systems	3
E E 542	Power System Analysis	3
E E 543	Power System Faults and Stability	3
E E 544	Distribution Systems	3