

ELECTRICAL ENGINEERING - MASTER OF SCIENCE IN ELECTRICAL ENGINEERING

Requirements and Options for the MSEE degree

The Program Learning 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 MSEE program who receive support as GAs are expected to take 9 credits of coursework toward the MSEE degree each semester.

Thesis Option:

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

E E 581	Digital Communication Systems I	
<i>Controls & Robotics</i>		
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
<i>Microelectronics/VLSI</i>		
E E 523	Analog VLSI Design	
<i>Photonics/Optics</i>		
E E 528	Fundamentals of Photonics	
<i>Electric Energy Systems</i>		
E E 543	Power System Faults and Stability	
<i>Digital Signal Processing</i>		
E E 545	Digital Signal Processing II	
or E E 596	Digital Image Processing	
<i>Computer Engineering</i>		
E E 562	Computer Systems Architecture	
<i>Communications</i>		
E E 571	Random Signal Analysis	
<i>Controls & Robotics</i>		
E E 551	Control Systems Synthesis	
Graduate Breadth Elective (choose 1-0 courses from a third area ¹		4-0
<i>Electromagnetics</i>		
E E 541	Antennas and Radiation	
<i>Microelectronics/VLSI</i>		
E E 512	ASIC Design	
<i>Electric Energy Systems</i>		
E E 537	Power Electronics	
<i>Digital Signal Processing</i>		
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	

<i>Communications</i>	
E E 581	Digital Communication Systems I
<i>Controls & Robotics</i>	
E E 576	Geometric Algebra
Graduate Electives²	16-18
Master's Technical Report	
E E 598	Master's Technical Report
Complete and defend master's technical report³	
Total Credits	30

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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
<i>College of Agriculture/Consumer/Environmental Sciences</i>		
AEEC		
ENVS		
GENE		
<i>College of Arts and Sciences</i>		
ASTR		
BCHE		
BIOL		
CSCI		
CHEM		
GEOL		
GPHY		
LING		
MATH		
MOLB		
PHYS		
STAT		
<i>College of Business</i>		
ECON		
MGMT		
<i>College of Engineering</i>		
A E		