

ELECTRICAL ENGINEERING - MASTER OF ENGINEERING IN ELECTRICAL ENGINEERING

Requirements and Options for the MEEE Degree

The Program Educational Objectives for the Master of Engineering Program 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.

The MEEE is a coursework-only option for obtaining a master's degree. The requirement is a total of 30 credits of graduate course work, including passing with a grade of B or better six Graduate Expanded Core Courses from at least three different areas of emphasis. No oral exam is required for the MEEE.

| Prefix | Title | Credits |
|---|---|--------------|
| Graduate Expanded Core Courses: choose 6 from at least 3 different areas¹ | | 18-21 |
| <i>Electromagnetics</i> | | |
| E E 515 | Electromagnetic Theory I ² | |
| E E 521 | Microwave Engineering | |
| E E 541 | Antennas and Radiation | |
| E E 548 | Introduction to Radar | |
| E E 549 | Smart Antennas | |
| E E 615 | Computational Electromagnetics | |
| <i>Microelectronics/VLSI</i> | | |
| E E 510 | Introduction to Analog and Digital VLSI | |
| E E 512 | ASIC Design | |
| E E 523 | Analog VLSI Design ² | |
| E E 567 | ARM SOC Design | |
| <i>Photonics</i> | | |
| E E 528 | Fundamentals of Photonics ² | |
| E E 577 | Fourier Methods in Electro-Optics | |
| E E 578 | Optical System Design | |
| <i>Electric Energy Systems</i> | | |
| E E 502 | Electricity Markets | |
| E E 533 | Power System Operation | |
| E E 534 | Power System Relaying | |
| E E 537 | Power Electronics | |
| E E 540 | Photovoltaic Devices and Systems | |
| E E 542 | Power Systems II | |
| E E 543 | Power Systems III ² | |
| E E 544 | Distribution Systems | |
| <i>Digital Signal Processing</i> | | |
| E E 545 | Digital Signal Processing II ² | |
| E E 565 | Machine Learning I ³ | |
| E E 576 | Geometric Algebra ³ | |
| E E 587 | Deep Learning for Image Processing | |
| E E 588 | Advanced Image Processing | |

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| E E 596 | Digital Image Processing ^{2,3} | |
| E E 597 | Neural Signal Processing | |
| <i>Computer Engineering</i> | | |
| E E 506 | Quantum Computing | |
| E E 556 | Hardware & Software Codesign | |
| E E 558 | Hardware Security and Trust | |
| E E 562 | Computer Systems Architecture ² | |
| E E 563 | Computer Performance Analysis I | |
| E E 590 | Selected Topics (Applications of Parallel Computing XSEDE Collaborative Course) | |
| E E 593 | Mobile Application Development | |
| <i>Communications</i> | | |
| E E 571 | Random Signal Analysis ² | |
| E E 572 | Modern Coding Theory | |
| E E 573 | Signal Compression | |
| E E 581 | Digital Communication Systems I | |
| E E 583 | Wireless Communications | |
| E E 586 | Information Theory | |
| <i>Controls & Robotics</i> | | |
| E E 551 | Control Systems Synthesis ² | |
| E E 553 | Noncooperative Game Theory | |
| E E 565 | Machine Learning I ³ | |
| E E 576 | Geometric Algebra ³ | |
| E E 596 | Digital Image Processing ³ | |
| Graduate Electives: choose 3 to 4 courses⁴ | | 12-9 |
| Total Credits | | 30 |

¹ The graduate expanded core courses must be passed with a grade of B or better. Note—a grade of B- (or lower) in a graduate expanded core course will not satisfy completion of that course for the MEEE.

² This course is one of the MSEE Graduate Core Courses. Students pursuing the MEEE who wish to pursue the Ph.D. in the future are encouraged to select three courses from this subset of 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.

³ This course is included in multiple areas of emphasis. Students may use this course to satisfy **one** area of emphasis.

⁴ E E courses must be numbered 500 or higher. Non-E E courses must be numbered 450 or higher. Credits of E E 590 Selected Topics which are not subtitled are limited to a total of 6.

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 MEEE degree. If a graduate course outside this list of prefixes logically fits into the MEEE program, see your graduate advisor about requesting an exception.

| Prefix | Title | Credits |
|---|-------|---------|
| <i>College of Agriculture/Consumer/Environmental Sciences</i> | | |
| AEEC | | |
| ENVS | | |
| GENE | | |
| <i>College of Arts and Sciences</i> | | |
| ASTR | | |
| BCHE | | |

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|-------------------------------|
| BIOL |
| C S |
| CHEM |
| GEOL |
| GPHY |
| LING |
| MATH |
| MOLB |
| PHYS |
| STAT |
| <i>College of Business</i> |
| ECON |
| MGMT |
| <i>College of Engineering</i> |
| 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

- The Graduate School allows qualified junior or senior students to substitute its graduate courses for required or elective courses in an undergraduate degree program and then subsequently count those same course as fulfilling graduate requirements in a related graduate program.
- Undergraduate students may apply for acceptance to the accelerated master's program after completing 60 semester hours of undergraduate coursework of which a minimum of 25 semester credit hours must be completed at NMSU.
- The grade point average must be at a minimum of 2.75.
- Students must receive a grade of B or higher in this coursework to be counted for graduate credit. If a grade of B- or lower is earned, it will not count toward the graduate degree.

Accepted MAP Courses

The following courses are accepted for use in the MAP program.

Any other E E 500+ course that is taught concurrently with an E E 400+ course may be considered after a consultation with an advisor. An exception will need to be made to the degree audit in order for the additional course(s) to be included on both the Undergraduate and Graduate degrees. E E 450+ courses are not eligible for MAP credit nor are E E 500+ courses that are not taught concurrently with an E E 400+ 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 573 | Signal Compression | 3 |
| E E 581 | Digital Communication Systems I | 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 567 | ARM SOC Design | 3 |
| E E 593 | Mobile Application Development | 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 |
| Power | | |
| E E 502 | Electricity Markets | 3 |
| E E 537 | Power Electronics | 3 |
| E E 540 | Photovoltaic Devices and Systems | 3 |
| E E 542 | Power Systems II | 3 |
| E E 543 | Power Systems III | 3 |