

ELECTRICAL ENGINEERING

2009 PROGRAM REQUIREMENTS

Requirements for the MSE degree in Electrical Engineering

Students must complete 10 course units, following the requirements below. If a Master's thesis is done, it will count for 2 course units (2 c.u. of ESE 999).

The four-part requirements are as follows:

- A. Four Courses (4) from a Core List of ESE Courses
- B. Two Courses (2) from an expanded list of ESE Courses
- C. One (1) SEAS course
- D. Three (3) Electives

A. Four (4) courses from Core List of courses:

ESE 500	Linear Systems Theory
ESE 504	Introduction to Optimization Theory
ESE 505	Control of Systems
ESE 509	Waves, Fibers and Antennas of Telecommunications (also TCOM 503)
ESE 510	Electromagnetic and Optical Theory
ESE 511	Modern Optics and Image Understanding
ESE 521	Semiconductor Device Physics and Technology
ESE 525	Nanoscale Science and Engineering
ESE 531	Digital Signal Processing
ESE 534	Computer Organization
ESE 535	Electronic Design Automation
ESE 539	Neural Networks, Chaos and Dynamics: Theory and Application
ESE 570	Digital Integrated Circuits and VLSI- Fundamentals
ESE 572	Analog Integrated Circuits
ESE 574	Principles and Practice of Microfabrication Technology
ESE 575	Introduction to Wireless Systems (also TCOM 511)
ESE 576	Digital Communication Systems
TCOM500	Introduction to Networks and Protocols
ENM 503	Probability

B. Two (2) further courses from Core List and/or following courses:

ESE 514	Physics of Materials I
ESE 517	Optical Imaging
ESE 519	Real-Time and Embedded Systems
ESE 529	RF MEMS
ESE 601	Hybrid Systems
ESE 605	Modern Convex Optimization
ESE 610	Electromagnetic and Optical Theory II
ESE 617	Non-Linear Control Theory
ESE 632	Random Process Models and Optimum Filtering
ESE 650	Learning in Robotics
ESE 674	Information Theory
ESE 680	Special Topics
ESE 899	Independent Study
ESE 999	Thesis Research (up to 2 course units for thesis option)

C. One (1) SEAS course

One course unit from any graduate offerings in: ESE, CIS, MEAM, TCOM, CIT, EAS, or ENM

D. Three (3) Electives

Three course units from any graduate courses offered in SEAS, SAS*, or Wharton

(*ex: technical and/or scientific content courses will mostly be approved- see graduate coordinator)

NOTES:

1. **Thesis Option**- Students who would like to complete a thesis may take two (2) units of ESE 999 (Thesis Research) under the expanded list.
2. A maximum of two CIT course is allowed for the MSE in EE degree
3. A maximum of one course unit of Independent Study (899) is allowed.
4. A maximum of two graduate-level course units may be transferred from another school to apply toward the MSE degree. These two courses should not have been used in fulfillment of any other degree(s).
5. Full time Master's degree students can register for three to five courses maintaining a 2.7 GPA. **A 2.7 GPA IS REQUIRED TO GRADUATE WITH YOUR MSE DEGREE FOR THOSE STUDENTS ENTERING FALL 2007 AND LATER.**
6. Lockheed-Martin Transfer credit: Lockheed Martin students must petition for transfer credit in person, and bring a letter from the Company (your supervisor), clearly stating which Advanced Courses you completed and the final grade(s) awarded. All documents should be given to Betty Gentner, located in 111 Towne Building.
7. Disallowed courses for any graduate degree in SEAS: A reminder that no undergraduate level courses, including those in SEAS, may be taken for a graduate degree requirement. **GAF 502: Public Speaking** can **not** be used towards your MSE degree in engineering. There are courses that appear at the graduate level that are being offered by other parts of the University that will *not* be approved for SEAS graduate degree requirements. These include courses being offered in specialized and professional training programs, such as the Organizational Dynamics Program, the Wharton Certificate Programs for Working Professionals, and the Wharton Evening School.

Please read the ESE Graduate Study Handbook for MSE programs for additional information on policies and procedures. The revised 2009-10 handbook will be available online August 2009.