ENGINEERING SCIENCE (MS) - MECHANICAL ENGINEERING

Description

The M.S. in engineering science is offered in a number of emphasis areas: aeroacoustics, biomedical engineering, chemical engineering, civil engineering, computational hydroscience, computer engineering, computer science, electrical engineering, electromagnetics, environmental engineering, geology, geological engineering, hydrology, mechanical engineering, material science and engineering, and telecommunications.

Minimum Total Credit Hours: 30

Course Requirements

A student must complete the requirements for an emphasis area. For most emphasis areas, the degree may be completed as a:

- Thesis option (30-hour program, to include 6 hours of thesis),
- Nonthesis option (30- hour program, to include a minimum of 3 hours of a design-oriented project course), or
- Coursework option (30-hour program, to include a final oral examination in front of a committee, but no written report)

Emphasis - Aeroacoustics

Description

A degree of M.S. in engineering science with emphasis in aeroacoustics prepares a student with advanced technical knowledge and communication skills for pursuing a career in industry, engineering research and development, public service, or for doctoral work.

Course Requirements

For the emphasis in aeroacoustics, thesis and nonthesis options are available. Both options require as a minimum 30 semester hours of graduate credit (to include 6 hours of math-related courses) in which the student's adviser must approve all course selections. Under the thesis option, the minimum of 30 graduate credits shall consist of 24 hours of graded course work and 6 thesis hours. The nonthesis option requires as a minimum 30 hours of graded course work.

Other Academic Requirements

For both the thesis and nonthesis options, a candidate must pass a final oral examination.

Emphasis - Hydrology & Comp Hydroscience

Description

An M.S. in engineering science with an emphasis in hydrology and computational hydroscience prepares a student with advanced technical knowledge and communication skills for pursuing a career in industry, engineering research and development, public service, or for doctoral work. This degree is cross-listed between several departments within the School of Engineering. The student's home department is the same as the student's academic adviser's home department. It covers the fields of surface hydrology, groundwater hydrology, computational hydroscience and/or hydraulic engineering.

Course Requirements

For the M.S. in engineering science with emphasis in hydrology and computational hydroscience, a student must complete 24 credit hours of coursework (plus at least 6 thesis hours). Graduate coursework must be approved by the student's advisory committee. Below is a full list of recommended courses. In addition to the previously mentioned credit hours, students must enroll in a 1-hour graduate seminar each semester.

Students must choose from this recommended list:

Code	Title	Hours
ENGR 5411	Engineering Analysis I	3
ENGR 5431	Approximate Methods of Engr Analysis I	3
ENGR 6090	Time Series Analysis	3
ENGR 6170	Continuum Mechanics	3
ENGR 6200	Advanced Remote Sensing	3
ENGR 6999A	Adv. Topics in Computational Mechanics	3
ENGR 6360	Groundwater Mechanics	3
ENGR 6370	Groundwater Modeling	3
ENGR 7110	Turbulence	3
ENGR 5475	Special Projects in Engineering Science	1-3
ENGR 5480	Special Projects in Engineering Science	1-3
ENGR 6032	Fluid Dynamics II	3
ENGR 5235	Environmental Remediation	3
ENGR 6450	Contaminant Transport	3
ENGR 6180	Vadose Zone Hydrology	3
ENGR 6160	Isotope Hydrogeology	3
ENGR 6270	Ray Methods in Electromagnetics	2-3
MATH 5051	Advanced Calculus I	3
MATH 5052	Advanced Calculus II	3
MATH 5351/7751	Mathematical Statistics I	3
MATH 5352/7752	Mathematical Statistics II	3
CIVE 5141	Flow in Open Channels	3
CIVE 5172	Stormwater Engineering and Management	3
CHME 5000	Advanced Transport Phenomena I	3
CHME 5102	Advanced Transport Phenomena II	3
GEOL 5000	Intro. to Geographic Information Systems	3
GEOL 5050	Hydrogeology	4
GEOL 6150	Geostatistics	3
GEOE 5100	Remote Sensing	3
GEOE 5030	Environmental Geochemistry	3
CSCI 5026	Parallel Computing	3
CSCI 5047	Digital Image Processing	3

Other Academic Requirements

or either option, a candidate must pass a final oral examination.

Emphasis - Materials Science and Engr

Description

A M.S. in engineering science with emphasis in materials science and engineering prepares a student with advanced technical knowledge and communication skills for pursuing a career in industry, engineering research and development, public service, or for doctoral work.

Course Requirements
The M.S. with emphasis in materials science and engineering can be completed as either a thesis or nonthesis option. The thesis option requires a minimum of 24 hours of course work as specified and approved by the student's adviser and 6 hours minimum of thesis credit. A nonthesis "project option" entails 27 hours of approved course work and 3 hours of a research project, plus a written report on the project and a comprehensive oral exam covering the project and all course work.

Other Academic Requirements
For either option, a candidate must pass a final oral examination.

Emphasis - Mechanical Engineering
Description
A M.S. in engineering science with emphasis in mechanical engineering prepares a student with advanced technical knowledge and communication skills for pursuing a career in industry, engineering research and development, public service, or for doctoral work.

Course Requirements
The M.S. with emphasis in mechanical engineering can be completed as a thesis or nonthesis option. The thesis option requires a minimum of 24 hours of course work as specified by the student's adviser and 6 hours minimum of thesis credit. A nonthesis "project option" entails 27 hours of approved course work plus 3 hours of a research project, plus a written report on the project and a comprehensive oral exam covering the project and all course work. A third, nonthesis option includes 30 hours of approved course work and a comprehensive oral exam.

Other Academic Requirements
For each option, a candidate must pass a final oral examination.