ENGINEERING SCIENCE (PHD) - MECHANICAL ENGINEERING

Engineering Science (PHD) - Mechanical Engineering

Course Requirements

A student must complete the requirements for one of the emphasis areas. All doctoral programs require completion of a comprehensive examination, dissertation prospectus, and a dissertation. See the department chair or adviser for specific requirements for an emphasis area.

Mechanical Engineering

Emphasis - Aeroacoustics

Description

A Ph.D. 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, or public/government service. Students entering the program come from a variety of engineering and nonengineering disciplines such as physics.

Course Requirements

The Ph.D. with emphasis in aeroacoustics requires a minimum 66 semester hours of graduate credit beyond the baccalaureate degree. The student's adviser must approve all course selections.

Other Academic Requirements

At the adviser's discretion, a preliminary examination may be required at or near the beginning of the student's work beyond the master's degree. A comprehensive written examination must be passed before entering the dissertation process.

Emphasis - Hydrology & Comp Hydroscience

Description

A Ph.D. in engineering science with 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, or public/government service. 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. This degree covers the fields of surface hydrology, groundwater hydrology, computational hydroscience and/or hydraulic engineering.

Course Requirements

For the Ph.D. in engineering science with emphasis in hydrology and computational hydroscience, a student must complete a minimum of 36 hours beyond the B.S. degree and 18 hours of dissertation credit. 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	Mathematical Statistics I	3
or MATH 7751	Advanced Statistics I	
MATH 5352	Mathematical Statistics II	3
or MATH 7752	Advanced Statistics II	
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

Other academic requirements include passing written and oral comprehensive exams including dissertation prospectus and dissertation defense. Before admission to candidacy, the student must pass written and oral comprehensive exams.

Emphasis - Materials Science and Engineering

Description

A Ph.D. 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, or public/government service. Students entering the program come from a variety of engineering and nonengineering disciplines such as physics or chemistry.

Course Requirements

The Ph.D. with an emphasis in materials science and engineering requires 30 semester hours of course work beyond the master's degree as specified and approved by the student's advisory committee, plus 12 hours of research and 18 dissertation hours.

Other Academic Requirements

Written and oral qualifying examinations, comprehensive examinations, a dissertation prospectus, and the dissertation defense are required. Before admission to candidacy, the student must pass the written and oral comprehensive exams.

Emphasis - Mechanical Engineering

Description

A Ph.D. 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, or public/government service. Students entering the program come from a variety of engineering and nonengineering disciplines such as civil engineering and physics.

Course Requirements

The Ph.D. with an emphasis in mechanical engineering requires 30 semester hours of course work as specified by the student's advisory committee, plus 12 hours of research and 18 dissertation hours.

Other Academic Requirements

Comprehensive exams must be passed before entering the dissertation process.