INFORMATION SYSTEMS ENGINEERING

About the Program

Rapid changes in technology and increasing technological sophistication needed to maintain global competitiveness are causing information technology industries to encourage their workforce to advance its knowledge, skills, and expertise through graduate-level education and training. For many engineers, this means education beyond the master's degree. More specifically, the kind of advanced knowledge needed in niche or specialized areas of emerging technologies can only be offered through doctoral programs that not only allow engineers to acquire and strengthen their own knowledge but also educate them to become technical leaders and technology developers in their own companies. The Ph.D. in Information Systems Engineering is designed to meet the need of engineers who want to be the technology leaders of the future. It is a 50 credit hour postgraduate program and can be pursued either on a full-time or a part-time basis. The classes are held in the evenings for the convenience of working engineers. The areas of specialization available in the program include information management and knowledge engineering, computer networks and computer architecture, intelligent systems and human/computer interaction, graphics and visualization, supply chain informatics, web services and security.

Admission Requirements

The following are the requirements for admission in the Ph.D. program.

1. A bachelor's degree in engineering or computer science from an accredited program with an expected GPA of 3 or higher on a 4-point scale.
2. A master's degree in engineering or computer science from an accredited program with an expected GPA of 3.5 or higher on a 4-point scale or 6.5 or higher on a 9-point scale
3. GRE taken within 5 years prior to admission
4. TOEFL for international students (minimum score of 84 in internet-based test)
5. At least one advanced mathematics course at the master's level (If the student has not taken an advanced math course at the master's level, an appropriate math course will be recommended as a prerequisite. This course must be successfully completed within the first year of the program.)
6. Three recommendation letters from faculty and/or employer (The recommendation letters must be on official letterhead and indicate the student's research potential.) Each recommender must also complete the Recommendation for Admission form.
7. A Statement of Purpose describing academic and research background, career goals and educational objectives and research interest

Graduation Requirements

A student must complete a minimum of 50 credit hours (beyond master's) for graduation. Out of the 50 credit hours, 24 credit hours will be based on coursework (beyond master's) and 26 credit hours will be based on Ph.D. dissertation.

The student must maintain a GPA of 3.2 out of 4.0 for good academic standing and graduation. Only one B- and no C grade will be allowed in the program.

Qualifying Examination

- The qualifying examination must be taken within 24 months after admission in the program. This will typically occur after finishing the core course, at least two specialization courses, and two courses outside the specialization area.
- The student must be in good academic standing at the time of the qualifying examination.
- The student must select three areas for the qualifying examination and declare one of the areas as the specialization area typically the area of the student's research.
- There will be two examiners in the specialization area (in the area of student's research). The other two areas will be minor areas (of the student's choice, but approved by the Doctoral Program Council) and will have one examiner each.
- The examination in the specialization area will include both written and oral tests. Examination in the minor areas will be written only.
- The student will select the examination areas, which must then be approved by the Doctoral Program Council. The Doctoral Program Council will assign the examiners for each of the areas selected.
- The Doctoral Program Council will review and approve the examination results.
- A student failing the qualifying examination the first time will be allowed to take it again; however, if the student fails it the second time, he/she will be terminated from the program.

Preliminary Examination

- The Doctoral Program Council must approve the dissertation topic, the proposal outline, and the dissertation committee prior to the preliminary examination.
- The student will make an open oral presentation, which has been prepared in consultation with the dissertation advisor, in defense of the proposal.

Candidacy

A student will become a candidate for the Ph.D. degree after completing the required coursework with a minimum GPA 3.2 out of 4.0 and after passing both the qualifying and the preliminary examinations. At this point, the student will be allowed to register for the dissertation work.

Dissertation Committee

The dissertation committee will include a minimum of four faculty members. One of these members must be from outside the College of Engineering and Computer Science. One of the faculty members will be the dissertation advisor and will serve as the chair of the dissertation committee. Depending on the dissertation topic, other members, including a qualified industry member, may be included in the dissertation committee. The industry member's curriculum vitae must be submitted to the Doctoral Program Council for approval.

Dissertation and Dissertation Defense

The dissertation must include original research work of archival quality. The student must submit a written copy of the dissertation to the dissertation committee for approval. The work must be defended at a

final oral examination open to other faculty, students, and the interested public.

Other Requirements

While there are no formal residency requirements for the part time students, it is expected that each Ph.D. student will spend sufficient time on campus for conducting research, interacting with other graduate students, and fostering intellectual activities. All students in the Ph.D. program are required to attend graduate seminars in the College of Engineering and Computer Science. After attaining candidacy, each Ph.D. student is required to present at least one seminar per year on his/her research until the dissertation is completed. All Ph.D. students are required to attend these research seminars. After attaining candidacy, each Ph.D. student is expected to spend at least 12 hours per week on campus working on his/her research and discussing research issues with faculty and fellow students.

Course Curriculum

The course curriculum will consist of one required core course, four specialization courses, three elective courses, and a seminar course. Each student must submit a course plan with specified specialization area within one semester after starting the program.

Core Course (3 credit hours)

The student must complete the core course titled "Information Engineering."

Specialization Courses (12 credit hours)

Four courses must be selected in an area of concentration with prior approval from the director of the doctoral program. At least two of these concentration courses must be 600-level courses.

Elective Courses (9 credit hours)

The student must take three elective courses, at least two of which must be from outside the student's concentration area.

Seminar Course (0 credit hours)

The student must register for and participate in the seminar course each semester after attaining candidacy and until the completion of the dissertation. The seminar course will be of pass/fail type and will not carry any credits.

Dissertation (26 credit hours)

The dissertation will be of pass/fail type and will not carry any letter grades.

Ph.D.-Level Courses

All Ph.D. courses must be 500 level and above. However, not all 500-level courses may be accepted in the Ph.D. program.

Transfer Credit

Up to 9 credit hours for courses from another university will be accepted as transfer credits; however, the Doctoral Program Council must approve the acceptance of transfer credits.

Additional Information

Additional information on Ph.D. programs can be requested from:

The Office of Interdisciplinary Programs,
College of Engineering and Computer Science,
University of Michigan-Dearborn, 116 MSEL,
4901 Evergreen Road,
Dearborn, MI 48128-2406