

## ***PhD Plan***

### ***Curriculum Design***

All requirements for the number of credits required, credit distributions, theses, reports, examinations, acceptable grades, time-to-degree, and other degree requirements are *identical to existing graduate school requirements policies and procedures*, except as modified or enhanced by this proposal.

#### **2.1.1 Admission Requirements**

All applicants for full admission must have completed courses in the set of prerequisite topics specified in Table 1. Applicants who have not completed all of the prerequisites may receive “provisional” admission and complete the missing topics at MTU. Those topics with an “MTU Equivalent” course at less than the 3000 level may not be taken for PhD degree credit, while those at or above the 3000 level may count for degree credit within the constraints of all other applicable course distribution requirements.

**Table 1: Prerequisite Courses**

Prerequisite Topic	MTU Equivalent
Linear Algebra	MA-2321
Differential Equations	MA-3521
Probability and Statistics	MA-3710 or 3720
Discrete Math or Structures	CS-2311
Data Structures	CS-2321
Computer Organization	CS-3421
Digital Logic	EE-2171 or 2173
Electronics	EE-3130
Microcontroller Interfacing	EE-3170 or 3173

Given the prerequisite topics listed, students with a Bachelor’s or Master’s degree in Computer Engineering from an accredited college or university will generally be eligible for full admission to this program. Those with a degree in Computer Science, Electrical Engineering, or a closely related field, will usually be eligible for provisional admission. Applicants with degrees from other disciplines may be considered for provisional admission to the program on a case by case basis. The ECE department has an established program of admitting graduate students with extenuating circumstances at the discretion of the graduate program director under the provision that they perform well their first year; their performance is tracked by the graduate program director. Provisional students are not awarded GRAs or GTAs so that they may concentrate on their studies.

#### **2.1.2 Required Courses**

All students must participate in EE 5970, Computer Engineering Seminar, 1 cr., Fall, Spring.

In addition, all PhD students must complete at least three Research Tools courses shown below within their first four semesters in residence (not including summers). A student may be exempted from any of these courses only if that student enrolls in a more demanding course in the same topic within the four-semester deadline. The identity and total number of courses required to be taken must be approved by the student’s advisor.

**Table 2: Required Courses**

EE 5970, Computer Engineering Seminar, 1 cr.
<b><i>three of the following four courses</i></b>
EE 6710 – Research Tools for Computer Engineers—Experimental Statistics. 1 cr.
EE 6711 – Research Tools for Computer Engineers—Stochastic Processes, Modeling and Simulation, 1 cr.
EE 6712 – Research Tools for Computer Engineers—Formal Methods, 1 cr.
EE 6713 – Research Tools for Computer Engineers—Hardware Implementation, 1 cr.

**2.1.3 Elective Course Distributions**

In addition to graduate school requirements for PhD course distributions

<http://www.gradschool.mtu.edu/catalog/phd.html> ., the following breadth criteria are required for all CpE PhD degrees:

1. At least 16 credits in the ECE department from the list of currently existing courses, including the required seminar and the Required Courses (above).
2. At least 9 credits in the CS department, 4000-level or above.

**2.1.4 Comprehensive Examinations**

Comprehensive Examinations shall be conducted in accordance with existing ECE Department procedures, with the subject matter customized for Computer Engineering topics.

**2.1.5 Program Completion Verification**

Completion of all requirements shall be certified by the student’s advisor using a degree audit form. The completed form shall be forwarded to the ECE graduate program committee.