THE PH. D. PROGRAM

The Ph.D. Program is designed to prepare students for academic or research careers. To complete the Ph.D. Program a student must make an original and significant contribution to the field of computer science and this contribution must be described in a Ph.D. Thesis. In addition to the Ph.D. thesis, there are course and examination requirements for the completion of the Ph.D. Program as described below. Ph.D. Students should keep in mind that these formal requirements are actually only a small part of a Ph.D. Degree. The main component of a Ph.D. program is the intangible process by which the student learns to do research and become a part of the academic community. Progress in the Ph.D. Program will be judged by a student's progress in research as well as their progress in satisfying the formal requirements.

Advisors
Upon entry to the program the Institute assigns each Ph.D. student an academic advisor.

By the end of their first quarter, Ph.D. students must also have chosen a research advisor different from their academic advisor. The research advisor must be tenure or tenure track faculty. This relationship will be formalized by a form signed by both the student and the advisor. The form will be reviewed and signed off on by the Chief Academic Officer.

If the academic advisor becomes the research advisor then a new academic advisor must be assigned. For the remainder of the program a student must have both an academic and a research advisor. The academic advisor is assigned by the Chief Academic Officer.

The relationship between a Ph.D. student and their research advisor is a central aspect of the Ph.D. program. This relationship requires the ongoing consent of both parties -- either party can withdraw from a Ph.D. research advising relationship by notifying the Chief Academic Officer. If a Ph.D. student has difficulty finding a research advisor, they should seek the help of the Chief Academic Officer. The Chief Academic Officer, in consultation with both academic and research advisors, is responsible for verifying that each graduating Ph.D. has fulfilled the Ph.D. requirements. The Chief Academic Officer shall be notified of all changes in advisors.

Course Load
Students should register for at least three “course units” each quarter. A course can be research with a faculty member who must approve the student’s research activities. More than one research course unit can be taken with the same faculty in a given quarter, up to three course units. The faculty member assigns a grade for the research course units at the end of the quarter and forwards the grade(s) to the TTI-C Registrar.

Faculty Reviews
The faculty will meet after the end of the winter quarter. At this meeting the faculty will decide for each student whether that student is making sufficient progress to continue in the Ph.D. Program. Students will be notified by April 15 each year whether or not they

will be permitted to continue in the Ph.D. program the next autumn. Faculty reviews are particularly significant in the third and later years --- the candidacy exam at the end of the second year serves as the primary review for the first and second years. In later years progress will be measured in part by the research papers written by the student.

Programming Experience

Ph.D. students must have or acquire experience in computer programming with a general purpose programming language. Before their candidacy exam students should have written some software system of approximately five thousand lines or more. This requirement can be satisfied through a summer programming job, programming experience as an undergraduate, programming in a course requiring this amount of programming or by independently writing software of the student's own design. This requirement is to be checked as part of the candidacy exam.

Ph.D. Course Requirements

All Ph.D. students must successfully complete (pass) at least eight courses. The course requirement is divided into a core requirement and electives. The core requirement must be completed before the spring quarter of a student's second year. Failure to complete the core requirement on time typically leads to failure of the candidacy exam and a petition must be submitted to retake the exam after completion of the core requirement. There are no formal grade requirements in the core but grades in the core courses are input to the candidacy exam.

The Core Requirement

The core consists of the following five courses:

TTIC 101	Algorithms
TTIC 102	Discrete Mathematics
TTIC 103	Artificial Intelligence
TTIC 104	Programming Languages
TTIC 105	Computer Architecture and Operating Systems

The above courses will have corresponding UOC course numbers and may be taught by either TTI-C or UOC faculty.

Electives

Students must take at least three technical courses in addition to those required by the core. These elective courses are typically in computer science but may be courses offered by another department such as mathematics, statistics, or economics. They should be technical courses and need to be approved by a student's academic advisor. Elective courses taken, and grades received, are input to the annual evaluation of a student's progress. The elective requirement is expected to be completed by the end of a student's fourth year.

Petitions

Students may submit a petition to the Chief Academic Officer for an exception to be made in the course requirements. For example, a student transferring to TTI-C from

another program may petition to have courses taken in another institution satisfy one of the core requirements. Reasonable course substitutions in the core requirement may be considered.

Candidacy Exam

Each Ph.D. student must pass a candidacy exam administered by an Examination Committee in the spring quarter of the second year. A single committee, appointed by the Chief Academic Officer, will administer all candidacy exams given in a single spring quarter. The committee will administer a private oral exam that determines the students' satisfaction of the background core requirement and the students' mastery of the material in other courses they have taken. The course work completed and the grades in those courses are input to the candidacy exam. The candidacy committee is also responsible for verifying that the student satisfies the core course requirement and the programming requirement. The candidacy exam has four possible outcomes --- failure, master's pass, master's pass with option to retake for full pass, and full pass. A master's pass is required to receive the master's degree within the Ph.D. Program. A full pass is required to continue in the Ph.D. Program. A failed exam, or a master's pass without permission to retake, may be retaken if a petition is submitted to, and signed by, the Chief Academic Officer.

Master's Degree Within the Ph.D. Program

A master's degree within the Ph.D. Program is granted to students who receive a master's pass or better on their candidacy exam and have completed all core course requirements and the programming requirement.

Doctoral Thesis and Defense

The institute requires each student to write a Doctoral Thesis that includes significant original research in computer science.

The student must successfully defend his or her thesis in a public forum before the Examination Committee and any other interested faculty members. The Examination Committee will decide the format for the defense. The thesis defense must occur at least two weeks after the student has given proper notice. Proper notice consists of the following actions:

- The student must give a draft of the thesis, approved by the advisor, to each member of the Examination Committee and to the Chief Academic Officer. The draft must be nearly complete with only minor changes expected in the final version.

- The student must give the thesis draft to the Chief Academic Officer. The Chief Academic Officer will register the thesis and put the copy on public display.

- The student must put an additional copy on display in the standard common area.

- The thesis abstract must be posted to the standard location.