Computer Science Department Policies for the Interdisciplinary PhD Program in Computer Science

Fall 2016

1   Overview

The Tulane Computer Science Department offers an Interdisciplinary PhD degree that focuses on the application of Computer Science and its principles to another area. This interdisciplinary area can be chosen from a range of disciplines at Tulane that offer a PhD, and includes Biology, Chemistry, Economics, Linguistics, Mathematics, Physics, Psychology, and Biomedical Engineering. Other areas at Tulane that have a PhD program also can be considered as long as a coherent proposal for an Interdisciplinary PhD can be put forward. Students interested in pursuing an Interdisciplinary PhD in Computer Science should contact the Computer Science graduate coordinator, Professor Wenk, or one of the Computer Science faculty to discuss their ideas.

The Interdisciplinary PhD program requires 48 hours of graduate course work, passing a qualifying examination that usually is given at the beginning of the third year of study, and completing and defending a dissertation. The exact curricular requirements vary according to the interdisciplinary area and the interests of the student.

2   Coursework

Each student should consult with their Computer Science faculty advisor and the representative faculty member from the interdisciplinary area to devise a list of courses to be taken as part of their curriculum. The Computer Science graduate faculty have to approve the list of courses that are part of the student's curriculum, as well as any changes to it.

A total of 48 hours of graduate course work (typically 16 classes of 3 credit hours each) is required for the Interdisciplinary PhD in Computer Science. The following specifies the distribution of the required coursework.

1. **Core Computer Science Courses (9 credit hours)**
   The following Computer Science courses (9 credit hours) are required as a breadth requirement in order to cover the areas of theory, systems, and applications.

   - CMPS 6610 Algorithms
   - One course from:
     - CMPS 66XX Computer Networks
     - CMPS 66XX Distributed Systems
   - One course from:
     - CMPS 6620 Artificial Intelligence

– CMPS 6720 Machine Learning

One of the milestones of the PhD program is a grade requirement of A- or better on all core Computer Science courses.

2. **Research Courses (6 credit hours)**
Each student must complete at least 6 credit hours of CMPS 7010 Research Seminar or CMPS 7020 Research in Computer Science during the first two years of the program.

3. **Computer Science Electives (6 credit hours)**
At least 6 credit hours of additional graduate Computer Science classes at the PhD-level are required.

4. **Area Electives (12 credit hours)**
At least 12 credit hours of graduate course work in the interdisciplinary area are required.

5. **General Electives (15 credit hours)**
Additional courses taken as part of the Interdisciplinary PhD must be approved by the Computer Science graduate faculty. These courses can be chosen from the list below:

   - Additional graduate Computer Science classes at the PhD-level.
     In exceptional circumstances at most 6 credit hours of graduate Computer Science classes below the PhD-level may be applied towards the general electives.

   - At most 6 additional credit hours of CMPS 7010 Research Seminar or CMPS 7020 Research in Computer Science, for a maximum of 12 total credit hours of these research courses.

   - Graduate classes in the interdisciplinary area.

   - Graduate classes in other related areas.

6. **Transfer Credit** Up to 24 credit hours of graduate work at another university may be transferable for this program, if the work is in Computer Science or is directly related to the interdisciplinary area the student plans to work in. In particular, students who have completed a Masters degree may be given credit for some of their Masters course work toward the Interdisciplinary PhD. Such transfer credit is approved on a course-by-course basis, and is not automatically guaranteed.

3 Faculty Advisor and PhD Committee

At the time a student applies for the Interdisciplinary PhD program, he or she should identify (1) an interdisciplinary area and (2) a potential Computer Science faculty advisor. Every student has to have a Computer Science faculty advisor at all times while pursuing the Interdisciplinary PhD program. The faculty advisor serves as the main point of contact for the student, oversees the student's program, and chairs the PhD committee.

A PhD committee should be proposed before the beginning of the student's fourth semester in the program. The committee should consist of at least four members: the Computer Science faculty advisor, a faculty member from the interdisciplinary area in which the student is working, one external committee member, and one additional Computer Science faculty member. The external committee member serves the role of an external examiner and can be from outside Tulane. An

external committee member from within Tulane should be a faculty member whose research interests are related to those of the student's program, but who is not directly involved in the student's research. Additional committee members can be included on the committee as appropriate.

The Computer Science faculty advisor and the faculty member from the interdisciplinary area help draft the student's proposed curriculum, which must then be approved by the Computer Science graduate faculty. The PhD Committee also reviews any changes to the student's curriculum, which also must be approved by the Computer Science graduate faculty. The PhD Committee also provides advice and guidance throughout the student's course of study, and oversees the qualifying exam, the prospectus, and the dissertation defense.

4   Milestones

1. **Application Process.** A student who is interested in applying to the program should first contact the Computer Science graduate coordinator, Professor Wenk, or any of the Computer Science graduate faculty to discuss their interest in Computer Science and in another area of research. At the time a student applies for the Interdisciplinary PhD program, he or she should identify (1) an interdisciplinary area and (2) a potential Computer Science faculty advisor. Once the student has been admitted into the Interdisciplinary PhD program, the student together with the Computer Science faculty advisor will (3) identify a faculty member from the interdisciplinary area and (4) draft a proposed curriculum. The proposed curriculum then needs to be approved by the Computer Science graduate faculty at the beginning of the student's first semester in the program.

2. **Grades.** All Core Computer Science courses have to be completed with a grade of A- or better. As set forth in the School of Science graduate handbook, a minimum average quality-point ratio of 3.0 (B) must be maintained overall.

3. **Qualifying Exam.** An oral qualifying exam at the beginning of the third year, conducted by the PhD committee. The purpose of this exam is to ensure the student is qualified to do independent research. The student will be tested over a set of selected topics related to the student's research area. The student will be informed about the material covered on the exam during the semester before the exam. The exam may start with a short presentation by the student and will be followed by questions from the committee.

4. **Prospectus.** At the beginning of the fourth year, a prospectus has to be submitted to the School of Science and Engineering. This prospectus is a 2-3 page description of the proposed PhD research. It should be circulated to the PhD committee for comments, and it has to be approved by the PhD advisor before being submitted.

5. **Thesis and Defense.** The final milestone is the PhD thesis that has to be defended in a presentation with questions from the PhD committee members.

5   Tulane Policies

The following Tulane policies apply to the Interdisciplinary PhD program in Computer Science:

- The *PhD Minimum Degree Requirements* issued by the Office of Graduate and Postdoctoral Studies; available at http://tulane.edu/ogps/policies.cfm

- The *Graduate Handbook* issued by the School of Science and Engineering; available at http://tulane.edu/sse/academics/graduate/forms-policies-procedures.cfm

- The *Interdisciplinary PhD* policies issued by the School of Science and Engineering; available at http://tulane.edu/sse/academics/graduate/interdisciplinary-phd.cfm

6   Example Schedule

In this example schedule, 48 credit hours (typically 16 classes of 3 credit hours each) are composed of:

- 9 credit hours of core Computer Science courses,
- 12 credit hours of CMPS 7010 Research Seminar or 7020 Research in Computer Science,
- 6 credit hours of required Computer Science electives
- 12 credit hours of area electives,
- 9 credit hours of general electives (shown as CMPS electives)

	Fall	Spring
(1) Identify interdisciplinary area. (2) Identify Computer Science faculty advisor.		
(3) Identify faculty member from interdisciplinary area. (4) Draft proposed curriculum.		
Year 1	Fall	Spring
	CMPS 6610 Algorithms	CMPS 66XX Computer Networks
	Area elective	Area elective
	CMPS 7010 Research Seminar	CMPS 7010 Research Seminar
Year 2		
	CMPS 6620 Artificial Intelligence	CMPS elective
	CMPS elective	CMPS elective
	Area elective	CMPS 7020 Research in Computer Science
Qualifying exam		
Year 3		
	CMPS elective	CMPS elective
	CMPS 7020 Research in Computer Science	
	Area elective	
Prospectus		
Year 4		
	CMPS 9990 Dissertation Research	CMPS 9990 Dissertation Research
Year 5		
	CMPS 9990 Dissertation Research	CMPS 9990 Dissertation Research
Dissertation and Defense		