Edmund A. Hajim School of Engineering & Applied Sciences

Department of Computer Science

PhD Student Handbook

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Department Overview

The University of Rochester Computer Science (URCS) PhD program was established in 1974 and celebrates 50 years of world-class research, especially in artificial intelligence/human-computer interaction, software systems, and the theory of computation. Our program provides a collegial, interactive environment in which faculty directly mentor students. All faculty and PhD students, regardless of their area, are familiar with each other's work. This is possible only in a relatively small, close-knit department.

Our philosophy is that computer science research is a community endeavor, crucially dependent on the vitality of the local community in which it takes place. We believe that graduate students are the heart of our research productivity, and faculty provide students with frequent and individual feedback on their progress, throughout their studies in the department.

Prospective Students

For questions about our Computer Science graduate program, visit our webpage. For general information about being a graduate student at Rochester, visit the graduate studies website.

Incoming Students

Congratulations on being accepted into the Computer Science PhD program! Out of hundreds of applications, yours stood out and we are excited to have you as part of our learning community. To prepare for a smooth onboarding process, please complete the items in this graduate student checklist. This will provided resources and deadlines for you to complete necessary requirements for admissions, housing, registration, health insurance and more. International students must also connect with the International Services Office to ensure that you have completed the appropriate paper work.

General URCS Information

Hours and University Holidays: URCS offices are open Monday through Friday, 8:00 a.m. to 4:30 p.m. These hours remain the same during all University breaks, except the following UR-observed holidays: New Year's Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Thanksgiving (2 days; Thursday and Friday), and Christmas Day. On these days all University offices are closed.

Emergency or Temporary Closings and Other Changes in Class Schedules and University Operations. The University plans to commence and conclude classes on the dates indicated in the academic calendars. But unforeseen circumstances or events may occur that require the University to temporarily close or otherwise adjust its student life, residential housing, class schedules and format, method and location of instruction, educational activities, and operations because of reasons beyond the University's control. For example, such circumstances or events may include but are not limited to inclement weather, the onset of public health crises, being subject to government order(s), significant safety or security concerns, faculty illness, strikes, labor disturbances, sabotage, terrorism, war, riot, civil unrest, fire, flood, earthquake, acts of God, malfunction of University equipment (including computers), cyberattacks, unavailability of particular University facilities occasioned by damage to the premises, repairs or other causes, as well as disruption/unavailability of utilities, labor, energy, materials, transportation, electricity, security, or the internet. If any of these or other unforeseen circumstances or events outside of the University's control occur, the University will respond as necessary and appropriate, and it assumes no liability for any interruption or adjustments made to student life, residential housing, class schedules and format, method and location of instruction, educational activities, and operations caused by these or other unforeseen

circumstances or events. And the University shall not be responsible for the refund of any tuition or fees in the event of any such unforeseen circumstances or events, except as may otherwise be expressly provided in the University's Leave of Absence and Withdrawal Policy or its published tuition refund schedule (Payments and Refunds - Office of the Bursar (rochester.edu)).

Location: The Computer Science department offices are located on the University of Rochester River Campus in Wegmans Hall.

Web Pages

University of Rochester:	http://www.rochester.edu
Hajim School of Engineering & Applied Sciences:	http://www.hajim.rochester.edu
Computer Science department:	https://cs.rochester.edu/index.html
AS&E Graduate Studies Office:	http://www.rochester.edu/college/gradstudies
International Services Office (ISO)	https://www.rochester.edu/iso

PhD Program Overview

The Computer Science PhD degree requires 90 credit hours of graduate study and accepts students coming from both the Bachelor's and Master's level. Students who enter the program with a Master's degree *may* be able to transfer in credit toward the 90 credit requirement. (see section on Transfer Credit) The program is generally completed in 5-7 years of full-time study.

The PhD program has 4 areas of concentration and research (aka focus areas). These are:

- Artificial Intelligence (AI)
- Human Computer Interaction (HCI)
- Systems
- Theory

All PhD students must take and pass 36-40 credits of CSC graduate-level coursework. The distribution of these credits will be determined by the student's focus area and the courses needed to fulfill the student's breadth and depth requirements. The remaining credits needed for the degree will consist mostly of CSC 595 - Research credits, though, with advisor permission, the student may also register for additional courses and up to two (2) credit bearing internships.

The program consists of broad study in computer science (breadth) with research-level training in a specialized area of the student's choice (depth or focus area). It is designed to lead students through a process of study and skill acquisition. There is no required sequence of courses. The only required course is CSC 400 (Problem Seminar).

The first and second years are spent acquiring breadth in computer science and gaining research skills in a focus area. In year 1, students focus mostly on coursework though it is possible for students to engage in original research in the first year. The second year includes research in the form of an area paper (which is directly advised by the area advisor). After the area paper, students focus on planning and conducting dissertation research. The third year consists of defining a dissertation topic, performing research, and

defending a thesis proposal. The year(s) thereafter are devoted to continuing research and writing a dissertation. Below is a brief overview of these important program benchmarks.

Year	Term	Benchmark
1	Fall	Register for CSC 400 (only required course) and three additional 4-credit courses, one from each focus area.
1	Spring	Register for breadth requirements; Select advisor in area of concentration and research by end of semester
2	Fall	Register for breadth / depth requirements.
2	Spring	Register for breadth / depth requirements; complete Area Paper; complete Area Exam (see focus area for details)
3	Fall	Select dissertation advisor (this will usually be your area advisor). Select preliminary advisory committee.
3	Spring	Select dissertation advisory committee (these will usually be preliminary members). Defend your Thesis Proposal
4	Fall	Six-month review. Most of your coursework will be completed. Register for "Research"
4	Spring	Six-month review. Register for "Research" and any required courses.
5	Fall	Six-month review. Register for "Research" and any required courses. Once 90 credits are earned, register for appropriate 900 course.
5	Spring	Six-month review. Assure all 90 credits are complete by May. Once 90 credits are earned, register for appropriate 9XX course.
5-7	Any	Once 90 credits are earned, register for appropriate 9XX course. Meet with program coordinator to register your thesis and plan to defend your work (Dissertation Defense)

Each year, near the start of the fall term, the Department will publicize a calendar of events for the year, including the dates of exams and the deadlines for selection of various advisors and committees.

Breadth Requirements

Breadth courses must be completed by the second year of graduate study. To satisfy Breadth Requirements students will complete two courses from each of the following areas: 1) AI/HCI 2) Systems 3) Theory. (For the purposes of Breadth requirements AI and HCI are one area.) A minimum of one course in each group must be taken in the first year. Students have the flexibility to complete all the breadth requirements during their first year, or to complete as few as one course per group in that year in order to allow more time for research. **A grade of B or better is required for all breadth courses**. Courses that can be used to satisfy Breadth Requirements are:

AI / HCI	**Systems**	**Theory**
CSC 412: Human-Computer Interaction	CSC 404 (ECE 404): Multiprocessor Architecture	CSC 480: Computer Models and Limitations (*)
CSC 440: Data Mining	CSC 478: Computer Security Foundations	CSC 481: Introduction to Cryptography (*)
CSC 442: Artificial Intelligence (*)	CSC 451: Advanced Computer Architecture	CSC 482: Design and Analysis of Efficient Algorithms (*)
CSC 444: Logical Foundations of Artificial Intelligence	CSC 452: Computer Organization (*)	CSC 483: Topics in Cryptography
CSC 445: Deep Learning	CSC 453: Collaborative Programming and Software Design	CSC 484: Advanced Algorithms
CSC 446: Machine Learning	CSC 454: Programming Language Design and Implementation	CSC 485: Algorithms and Elections
CSC 447: Natural Language Processing	CSC 455: Software Analysis and Improvement	CSC 486: Computational Complexity
CSC 448: Statistical Speech and Language Processing	CSC 456: Operating Systems	CSC 487: Advanced Modes of Computation
CSC 449: Machine Vision	CSC 457: Computer Networks	CSC 488: Analytic Methods in Computer Science
CSC 466: Frontiers in Deep Learning	CSC 458: Parallel and Distributed Systems	CSC 489: Algorithmic Game Theory
CSC 477: End-to-End Deep Learning	CSC 463: Data Management Systems	
	CSC 572: Mobile Vision Computing	
	CSC 576: Adv Topics in Data Management	

(*) Indicates the following course limits: a) Max of one starred course per area can be used toward the breadth requirement; b) Max two starred courses total, can be used toward the Breadth Requirement; c) does not satisfy Depth Requirement

Course names and numbers can sometimes change. A current list of acceptable breadth courses can always be found at http://cs.rochester.edu/graduate/phd-requirements.html#Breadth

Depth / Area Requirements

The PhD student's Area Requirements are determined by their chosen research area (AI, HCI, Systems, or Theory). Each area outlines requirements for additional coursework, a research paper, and an oral exam to be completed during the second year of graduate study.

Depth Coursework must be completed by the end of the fourth year, and with **a minimum grade of B**.

Area Exam: The form and content of the area exam, which occurs at the end of the second year, is determined by the faculty in each research area. It may include a written exam, a take-home exam, an oral exam, or some combination of these.

Area Paper: The area paper is expected to explicitly demonstrate research skills. Its research contribution should be comparable to that of a refereed publication. In certain cases, a fresh analysis of previous work—usually including original and critical derivations, synthesis, and commentary—may be considered profound enough to constitute a research contribution in and of itself. It is expected to include a more comprehensive survey of existing work in the field than is found in the typical conference paper. The area paper's topic should be important, interesting, and relevant in the context of the current state of the field, and it should take pains to make this context clear. What was the earlier relevant research? How do the contributions of this paper relate to that research? What motivates this stream of research? Why does the student's work adopt this particular approach? What other approaches have been eschewed, and why? What open questions remain? What problems prevented the student from resolving these open questions, and what lines of attack suggest themselves for future work?

Area-specific Depth Requirements are outlined below.

Artificial Intelligence Depth Requirements

Paper and Exam: The student should form a committee of three or more AI faculty members before the area paper is due, and schedule a time and date for the exam so that all committee members can attend. The paper should include a survey of a research topic and initial original research.
The oral exam (which is structured like a defense) begins with the student providing a 20-minute overview of the area paper, followed by an hour of intensive questioning by faculty members.
Questions from faculty members will include:

- General questions about AI
- Questions covering content learned in AI breadth courses taken by the student
- Questions about the area paper

Students are responsible for preparing themselves for these questions.

Coursework: The student must complete **two** additional graduate-level AI/HCI courses by the end of the 4th year. These may include non-starred AI/HCI courses, BCS 505 (Perception and Motor Systems), or with written permission of the AI faculty may be other advanced courses relevant to the student's research.

Human Computer Interaction Depth Requirements

Paper and Exam: The student should form a committee of three or more faculty members (at least two faculty from the CS department) before the area paper is due, and schedule a time and date for the exam so that all committee members can attend.
The area paper may be a survey of a research topic, original research, or a combination of both.
Following a public presentation of the paper, the student will answer questions from the committee about the paper and about any topic in HCI that is broadly relevant to the research topic.
Coursework: By the end of the fourth year, the student must complete **three** additional courses with grades of B or better, with one class drawn from each of the following three clusters:

Core AI Cluster	Statistics Cluster	Special Topics Cluster
1. CSC445 - Deep Learning 2. CSC447 - Natural Language Processing 3. CSC576 - Advanced Machine Learning and Optimization 4. CSC444 - Logical Foundations of Artificial Intelligence 5. CSC440 - Data Mining 6. CSC449 - Machine Vision	1. CSC462 - Computational Introduction to Statistics 2. CSC465 - Intermediate Statistical Methods	1. Network Sciences A. PHY525 - Data Science II: Complexity and Network Theory (offered by Gourab Ghosal) B. ECE442 - Network Science Analytics C. ECE440 - Introduction to Random Processes 2. Theory of Emotion A. CSP550 - Social Psychology of Emotion B. CSP557 - Affectation Bases of Behavior 3. Health and Well-being A. BST465 - Design of Clinical Trials B. ECE452 - Medical Imaging-Theory & Implementation C. CSC575 - Intervention Strategies for Health Applications 4. Multimodal Interaction A. CSC416 - AR/VR Interaction Design

Systems Depth Requirements

Paper and Exam: The committee will include most (if not all) of the systems faculty. For scheduling purposes, the systems faculty will provide the relevant student(s) with a few time slots (various days and times) in which they may schedule their exam(s).

The area paper should be original MS-level research and a survey of related research topics. It is due two weeks before the area exam. At that same time, the systems faculty will provide the student with a small set of "take home" papers to be studied for the exam. At the area exam, following a presentation of the area paper, the student will answer questions from the faculty about the area paper, the take-home papers, and background knowledge from systems courses.

Coursework: By the end of the fourth year, the student must complete two additional graduate-level systems courses with grades of B or better. These may include non-starred courses on the systems list or other advanced courses with written permission of the systems faculty.

Theory Depth Requirements

Paper and Exam: The committee will include all of the theory faculty and the student will need to schedule a time and date for the exam so that all committee members can attend.
The area process including the area defense is organized as follows:

- The student submits an area paper reflecting research ability. The area paper is due eight calendar days before the last day of classes of the spring term or one week before the oral exam, whichever comes first.
- Approximately two weeks before the oral exam, the student is given a set of "take home" papers.
- Approximately three hours before the oral exam, the student is given a written set of "morning questions."
- The area defense consists of an oral exam covering the area paper, the take home papers, the morning questions, and other area-related questions. The length of the exam is typically between 2 and 3 hours.

Coursework: By the end of the fourth year, the student must complete, CSC 484 and CSC 486, and one additional non-starred course from the theory list, each with a grade of B or better.

Advisors

Each student is assigned a general advisor before arriving to campus. This general advisor helps determine which courses to take and tries to answer questions on just about any topic. The first year, students will get acquainted with their general advisor as well as other faculty in the department. By the end of the first year, students choose an Area Advisor in their focus area.

In the usual case, you will have a single advisor, who will have a primary or secondary appointment in Computer Science (they are CS tenure track faculty). Your Area Advisor will: 1) Directly advise the area paper 2) Help in planning the thesis proposal defense 3) Point students towards appropriate literature 4) Advise proposal-related (and other) research 5) Read proposal drafts and give feedback 6) Give general advice 7) Play a crucial role in the area exam and Proposal defense. In some cases, it may be appropriate to choose a pair of co- advisors, in which case one of the advisors must have a primary appointment in Computer Science. Choosing an advisor should not be done lightly; changing advisors can delay completion of your studies. Ideally, your Area Advisor will work closely with you for the remainder of your program and advise or Chair your most important exam committees.

Dissertation Advisor and Preliminary Dissertation Advisory Committee

Soon after the area process, you should concentrate on narrowing down your interests to more specific ideas, such as:

- "Semantic parsing of natural language" "
- Collapsing Complexity Classes via Counting"
- "Parallel Visual Shape Recognition"
- "Latency Tolerance in Distributed Shared Memory Systems"

Part of this process will be exploring ideas with faculty and finding a dissertation advisor and a preliminary advisory committee. You must register your dissertation advisor and a preliminary advisory committee with the graduate coordinator no later than December 31 of your third year. The preliminary advisory committee must contain at least three faculty members with tenure- track appointments (at least two of them primary appointments) in computer science.[1] A faculty member from outside the department can also be included, and must be included when the final dissertation advisory committee is formed in the second term of the third year.[2]

Dissertation Advisory Committee

Your preliminary advisory committee members will usually become your dissertation advisory committee. If your preliminary advisory committee had no outside member, you must bring one on board at this time. Each member must sign your thesis proposal defense form immediately after the thesis proposal defense. Your advisor should promptly return this form to the graduate coordinator.

PAS (Plenary Advising Sessions) meetings

Twice a year, usually in January and May, the department's faculty hold Plenary Advising Sessions (PAS). At the PAS meeting, faculty discuss and review the progress of each individual student. Progress is assessed and feedback—both positive and negative—is prepared in writing for each student in the form of a letter from the Chair. The idea is to make sure nobody "falls through the cracks". The decision as to whether adequate progress is being made is based on each student's individual circumstances.

PAS Materials

At the end of each term, students provide their advisor (general advisor, area advisor, or dissertation advisor, depending on your year) with updated "PAS materials." (Maintaining your PAS materials on your computer and updating them each term is a time-saving approach.) Your spring PAS materials should be cumulative for the year. However, please make clear what was done each term. Your advisor may request additional PAS materials beyond those described below. At the least, however, student PAS materials should include:

- A brief description of your semester/year in the program, the milestones you have passed so far, and what you've been doing this year (including a description of any research you have done).
- A complete publication list (TRs, conference and journal papers, etc.), with any written (or substantially revised) this semester/year specially indicated.
- A discussion of your plans for the coming terms, with as much specificity as possible 10 about your plans for the next term.
- (Optional) If you have had any special problems, your PAS materials are a good place to discuss and explain them, and to propose concrete mechanisms that will allow you to surmount them.

Graduate Student Support

The department provides financial support for students whose performance and progress is adequate. This support includes a monthly stipend, health insurance, and full tuition coverage up to 90 hours minus incoming transfer credit. Students may be required to pay for any additional tuition they might need to graduate. Continuing enrollment fees will be paid for all students otherwise supported by the department.

[1] This is a department requirement. Exceptions can be granted by the faculty.

[2] Members external to the University can serve in place of the outside department member if approved beforehand by the Dean's office through a petition process. Please consult the graduate coordinator if this possibility is of interest.

Most of our students are supported by federal grants. The granting agencies require us to keep track of the service associated with their financial support. Therefore, we need to state clearly the policy connected with the financial support of graduate students. If there is a need to deviate from the following guidelines, students should obtain approval from their advisor and the department Chair.

As a general rule, graduate fellowships take the place of the department stipend. It is our policy, however, to ensure that such fellowships are a net financial win for the student. If you receive a fellowship that pays between 10% and 100% of the department's usual stipend, we will augment it to bring the total to 110% percent of the stipend.

The stipend is paid semi-monthly starting in September and ending in May. To remain in good standing, students are expected to do their work during the period for which they are being supported. With the exception of the break between fall and spring semesters, students should not be away from the Department for more than a week. Students with summer jobs should not leave the department before the end of classes in spring, and are expected to return by the start of the first day of classes in fall. A student who has been assigned to be a TA should return at least a week before classes begin (this is true for the spring semester as well). While receiving a stipend from the Department, students should notify the department of any outside employment, and any significant (over 8 hours per week) outside employment may have stipend implications.

The PhD program is a full-time commitment. As a general rule, stipends are associated with half of that commitment —i.e., 20 hours/wk. The other half is devoted to academic pursuits. The department recognizes that many students — particularly those in later years of the PhD program — may devote much of their academic time to research as well. Teaching assistantships are an academic requirement of the PhD program, and are expected regardless of the student's source of funding. TA duties can be expected to require on the order of 10 hours/wk of effort (plus, in some cases, an expectation to attend class sessions).

Adequate Academic Progress

For "adequate" progress there are four criteria:

(1) satisfactory grades
(2) life-time accumulation of fewer than two formally unsatisfactory performances on TA/RA contracts, and, more generally, appropriate overall TA/RA performance;
(3) satisfactory and timely completion of the area process, thesis proposal defense, six-month reviews, and other milestones; and
(4) generation of research results, and development of research skills, at an acceptable rate.

One mechanism for monitoring criterion (4) is the six-month review process, through which you and your dissertation committee will discuss your research progress and set goals for the next period. The committee then reports its prognosis to the PAS, along with a recommendation regarding continuation of support and its nature. A student has satisfactory grades if a current transcript contains fewer than two unsatisfactory grades. A grade of C, U, or E is unsatisfactory, as is an outstanding grade of I or N that has remained on the transcript for more than one semester.

Problems

This guide has given dates for running the hurdles in the program. If the deadlines are not met, the department may take some drastic action, such as terminating your support. It is up to you to exhibit "satisfactory progress" throughout your graduate career. Students can be terminated for failure to make adequate progress, which includes grades of B- or below in breadth or depth classes, failing or missing the deadlines for the area exam and thesis proposal, and poor evaluations (C or below) on RA and TA contracts.

If for some reason a problem arises that is not covered in this guide, bring it to the attention of your advisor or any other appropriate faculty member. Such problems may include change of topic, change of advisor, and getting out of "sync" (taking leaves, etc.). For instance, if you started in the spring term or took a leave, it is important to find out what the "end of the third year" means for you. Problems (such as change of advisor or topic) that you feel may require you to spend extra time on your dissertation should also be brought to the attention of the department. It should be noted that problems under your control (you chose the wrong topic or advisor) are likely to be treated differently from those not under your control (your advisor leaves, you are seriously ill, your thesis problem is solved by someone else after you pass your thesis proposal defense). If, for some extraordinary reason, you need to request an extension, it is essential to petition the faculty in writing at the earliest possible moment, certainly well before the deadline that might be missed.

Research Assistant, CSC 595

PhD students in Computer Science are expected to be either a research assistant (RA) or a teaching assistant (TA) each term except for the first semester of the first year. At the beginning of each semester students will meet with their advisor to clearly set out plans and expectations for the RA role, complete an RA contract, and register for CSC 595. Note it is possible to have an RA contract with a faculty member other than your advisor. Because an RA contract is required whenever you are registered for CSC 595 credits, it may sometimes be required during a semester in which you also have a TA contract. Once the contract is reviewed and signed by both the student and faculty member, it is returned to the Graduate Coordinator to be included in the student's file. Depending on the number of hours the student will work on research, students may register for a variable number of credits of CSC 595. For most students, the number of CSC 595 credits registered for is what is needed to get them to full time enrollment status.

Teaching Assistant Requirement

Teaching experience deepens and enriches a student's understanding of the discipline and provides invaluable professional training and is, therefore, considered to be a vital component of any PhD program. Computer Science PhD students are required to be a TA for three semesters during their time at Rochester (or two, if they are supported by an external fellowship). TAing is usually done during the first two years. Most TA assignments involve either teaching small undergraduate laboratory sections at the introductory level or grading and consulting for upper-level undergraduate or first-year courses. TA assignments are made during the term preceding the course. At the beginning of each semester as well as at the beginning of summer (if you are spending the summer here in the department), students should meet with the faculty member teaching the course for which they are a TA to clearly set out plans and expectations for the term and to complete a TA contract. Once the contract is reviewed and signed by both the student and faculty member, it is returned to the Graduate Coordinator to be included in the student's file. Teaching assistantships are an academic requirement of the PhD program, and are expected regardless of the

student's source of funding. TA duties can be expected to require on the order of 10 hours/wk of effort (plus, in some cases, an expectation to attend class sessions). The department keeps track of TA assignments however students are also welcomed to do so should there ever be a question.

Registration

To be considered a full-time graduate student by the University, you must register for at least 9 credit hours per semester (Fall and Spring) in addition to your RA or TA duties. Regular graduate courses are 4 credit hours each, therefore the usual registration is three courses. URCS Department policy calls for first-semester Ph.D. students to take 16 credits, 4 of which come from CSC 400. In any subsequent semester, a student who is taking 2 or 3 regular courses should register for a total of 12 credits. A student taking 0 or 1 regular courses should register for a total of 9 credits. In general, this means that students will transition from 12 credits a semester to 9 credits a semester after their second year in the program, or when they have completed their depth and breadth requirements.

There are four kinds of courses: (1) regular courses, most of which are four credit hours, (2) seminar courses (the 57X numbers), which may allow a variable number of credits, (3) the internship course (594), which is one credit hour, and (4) research (and reading) courses, which allow a variable number of credits. Reading courses (591) are used when you wish to pursue material that is not directly related to your research. The University allows no more than six credits of research and reading courses to count toward the 30 credit hours for the Master's degree (unless completing a Master's thesis). Students who wish to audit a course, do so at their own expense.

Summers

The department believes that practical experience in industrial settings is crucial to motivating, guiding, and advancing research in computer science. Therefore, students are encouraged to arrange summer research internships during one or more of their first three years in the department. Summer employment within the department is generally available only to students working on a project with suitable grant support. Since national competition for summer positions in industry is stiff, you should discuss your summer plans with your advisor as early as possible in the spring term, or even late in the fall term. Both department support and research internships should be reported in your fall PAS materials. Students are expected to return to campus in time for the first day of classes (or a week before, if they have TA responsibilities), unless they obtain permission from their advisor and the chair for a delayed return.

Continuation of Enrollment

Matriculated graduate students must maintain continuous registration (fall and spring) until they are awarded degrees, withdraw from the degree program, or are dropped from the degree program by the University. Once PhD students have accumulated 90 credit hours, they will register for a placeholder course. Most often the course is CSC 999, a zero-credit course that certifies that the student is full-time and working on completing a dissertation. Below are other continuous enrollment courses and students must register each semester for the course most appropriate for their situation until they have completed the requirements for the Ph.D.

CSC 995 – Continuation of Doctoral Enrollment
PhD students who have completed all of the requirements for the degree (except the dissertation) and need only to complete the doctoral dissertation while not in residence and not working full-time on the dissertation should register for 995.(this is a part time student status and allows for the student to have full time external employment) This course has zero credit hours and no mandatory health fee. There is a flat-rate fee for registration. Please note that this course will not defer student loans, as it is a less than part-time registration. An updated ID card cannot be obtained through this course registration.

CSC 997 – Doctoral Dissertation (<5 years)
PhD students who are eligible for 997 can do so only if they have (1) completed their 90 credits, and (2) have not yet started their fifth year of graduate studies. (for full time students with less than 5 years)

CSC 999 – Doctoral Dissertation
PhD students who have completed all of the requirements for the degree (except the dissertation) and are in residence as full-time students should register for 999. The student's advisor's name is required.
PhD students who have completed all of the requirements for the degree (except the dissertation), who are full-time students working on the dissertation, and have the permission of the department and the dean of graduate studies in Arts, Sciences and Engineering to be in residence elsewhere, should register for 999A or 999B.
This course has zero credit hours but is considered full-time registration. There is a flat-rate fee for registration and mandatory health fee. Student loans may be deferred when registering for this course.

Grades

The University grading scheme for graduate students is as follows:

A Excellent	B Good	S Satisfactory	W Withdraw from a course
A-	B-	E Failure	
			N No grade
B+	C Poor	I Incomplete	

University policy does not provide for a grade of A+, but faculty members are free to assign it for intra-departmental purposes. The letter grade I is assigned only when there are circumstances beyond the student's control, such as illness or personal emergency, that prevented the student from finishing the course work on time, and the instructor and student involved have agreed that additional time has been granted for the completion of the work in the course. A written Memorandum of Understanding (MOU) between the student and the instructor describing precisely the work that must be completed and agreed upon deadlines will be submitted to the graduate coordinator for each grade of I. Incomplete work must be completed within two semesters. If an MOU is not submitted to the graduate coordinator within one semester, the instructor will be asked to assign a grade based on the work completed. If the terms of the MOU are not satisfied by the date specified, then either (1) the instructor may fail the student or award a grade based on the work completed; (2) a revised MOU may be negotiated (though the instructor is under no obligation to do so); or (3) the I may be converted to an N.

The letter grade N is of a conjectural status and is not a substitute for E or I. It may be used if a student never appeared in class, if the student failed to complete the course and did not arrange for an

"Incomplete" (see above), or if the faculty member was instructed by the Board on Academic Honesty to assign a grade of N. In all other circumstances, the appropriate temporizing grade is I. Operationally, N is equivalent to W (withdrawn). It does not count toward degree requirements and may trigger a review of the adequacy of a student's performance. Students receive graduate credit for adequate grades received (A, B, S, and up to one grade of C). 30 hours of graduate credit is required for a Master's degree; 90 hours for a doctorate. No more than one C is acceptable over the course of a graduate program. The University rule, from the "Regulations and University Policies Concerning Graduate Studies," states:

> Minimum grades for courses or research work carrying graduate credit are C or S. C is, however, considered to be a failing grade for any student who is on probation. Moreover, a student who receives the grade of C in two courses, or for eight hours of work toward the degree (even if in only one course), will thereby have raised the question of the adequacy of his or her academic performance. In those circumstances the student's record must be reviewed by the associate dean of graduate studies (in the School of Nursing, the Student Affairs Committee) in consultation with the student and the program director.

Two other important aspects of support are the following:

- Students who have accumulated 90 hours of credit must still maintain full-time enrollment through a continuing enrollment fee.
- Students who receive an I, N, or E accumulate no credit hours, although tuition for registration of the course has already been paid by the department.

To deal with these matters, the department has adopted the following policy: The department will pay tuition for all graduate students making adequate progress up to 90 hours minus incoming transfer credit. Students may be required to pay for any additional tuition they might need to graduate. Continuing enrollment will be paid for all students otherwise supported by the department.

A student has satisfactory grades if a current transcript contains fewer than two unsatisfactory grades. A grade of C, U, or E is unsatisfactory, as is an outstanding grade of I or N that has remained on the transcript for more than one semester.

For any other questions on official policy on grades, hours needed for completion of a degree, or other "officialese" concerning your life as a graduate student, refer to "Regulations and University Policies Concerning Graduate Studies" https://www.rochester.edu/graduateeducation/wp-content/uploads/2022/07/UR-Graduate-Regulations-and-Policies-1.pdf and consult with the Chair, the graduate coordinator, or an appropriate faculty member.

Thesis Topic

After choosing an advisor and a general category, the next step is to decide what you really want to do. This involves finding, with the help of your advisor, a suitable topic. After choosing a topic, you should search through literature to answer the following questions:

- What (if anything) has been done already?

- What has not been done?
- What are the major gaps in previous work?
- What are recognized “next steps”?

After you have a grasp of the area and the problem, you will need to outline how your research will address the problem. This outline should include ideas on:

- How the research will attack the problem?
- What it will not attack?
- How it will fit in with previous work?
- What the essential contribution of the work will be?

You should be actively engaged in research on the topic by the fall of your third year.

Producing a Thesis Proposal

This proposal should explain:

- The context of the problem
- The problem itself
- Previous approaches
- Your proposed research

You should also include a well-researched bibliography. The thesis proposal should be of high quality in style, content, and exposition. The thesis proposal and all other publications you have written should be distributed to the dissertation advisory committee at least ten days before your thesis proposal defense.

The thesis proposal will usually describe your:

- Research
- The specific research directions you will pursue in the immediate future
- The general research directions you will pursue in the more distant future
- The theme that will unify your research into a coherent PhD dissertation
- Proposed timeline for your thesis research

The thesis proposal should demonstrate that you have acquired the skills needed to perform dissertation-quality research. You are expected to have performed new research of substantial strength and novelty since your area paper. Except in exceptional cases, this new research should be appropriate for inclusion in the dissertation.

The thesis proposal should demonstrate that you have the technical strength needed to do PhD-quality research, and the vision to see the “big picture” into which that research fits. Furthermore, the thesis proposal should show that you not only know how to solve problems, but also how to frame the issues. Finally, the thesis proposal should demonstrate that you have developed strong and insightful intuitions as to which research themes are promising. The thesis proposal defense serves to verify these points.

In short, the proposal should demonstrate to the dissertation advisory committee that an entire dissertation is indeed likely to result within a reasonable time frame.

A successful thesis proposal is not a guaranteed formula for producing a successful dissertation. As the research progresses, the research goals may change dynamically. Some initial goals may be too hard to be solved within the time frame; some may be solved by other researchers concurrently. We therefore expect that the dissertation project will evolve to meet these contingencies, and that this evolution will be the primary topic of six-month reviews.

Scheduling a Thesis Proposal Defense

Once sufficient feedback on the thesis proposal has been gathered, you can schedule the Thesis Proposal Defense. This is best done early in the spring of the third year, though it can be done earlier, and must be done before the spring PAS. Scheduling late in the spring semester often proves to be logistically challenging, or even impossible. When you are ready to schedule the thesis proposal defense, see the graduate coordinator to reserve a room and date, and to complete a Thesis Proposal Defense Appointment Form. This must be completed no later than April 1 of a student's third year. The graduate coordinator will not schedule more than two events in the same day—one in the morning and one in the afternoon—to ensure the availability of interested faculty members. Students should try to schedule events well in advance to make sure they meet the spring PAS deadline.

Defending the Thesis Proposal

A public presentation is a required part of the thesis proposal defense. It is a chance for you to publicly present your ideas to the community and for your committee to judge both the ideas and the presentation. The presentation should take no more than an hour, and concentrate on the proposed research and the current year's research progress. You should provide the graduate coordinator with the date, time, place, and abstract of the talk at least ten days in advance. The graduate coordinator will then advertise the talk to the faculty, staff, and students.

The actual exam, which will normally occur immediately following the public presentation, is a meeting of the dissertation advisory committee and the student. Other faculty may attend and freely question and comment. The purpose of the exam is for the committee—now that it has read the thesis proposal and heard the public talk—to ask you further questions and give you feedback. Questions may address any aspect of the proposal, including the actual research, the larger problem, your familiarity with previous work, and your expected attack on specific sub- problems. In addition to direct feedback, the committee will also report to the PAS.

Admission to Candidacy

Candidacy status is an indication that a doctoral student has developed sufficient mastery of a discipline to produce an original research contribution in their field. When the associate dean of a school certifies that a student has passed the PhD qualifying examination (or in CS, the thesis proposal defense), the student is a candidate for the PhD Degree. Upon request, the University dean of graduate education may issue a certificate attesting to this fact.

The Home Stretch

After passing the Thesis Proposal Defense, your research will now be in progress, you will know what you want to accomplish, and you will know how you plan to accomplish it. At this point you will have a very concrete basis for your further work: the background will have been done (a careful literature review), a document of some size and clarity will have been written, you will have results and feedback from faculty and students, and your plan will have been made and approved. Work closely with your advisor, who will help make sure that you do not fail, and keep in close contact with your committee members, to benefit from their insights. Five years from entry (with or without a Master's degree) generally suffice to complete a Ph.D. It is possible to take more than five, but the University will automatically terminate your Ph.D. candidacy after seven years unless you successfully petition the Graduate Dean for an extension.

The Dissertation

When your dissertation is finished and approved, you will give a public seminar, after which you will defend your work in an executive session ("grilling") with the committee. The full specifications for dissertation requirements can be found in the Red Book ("Regulations and University Policies Concerning Graduate Study"), which is available online here: http://www.rochester.edu/GradBulletin/PDFbulletin/Regulations.pdf You will need the approval of your advisor, your committee, and the department Chair to register your dissertation before you register. Your committee should have at least two weeks to read the dissertation. You will then need them to submit their approvals online in the PhD Completion Site (the graduate coordinator will assist you with the online registration of your thesis). The Dean's Office requires thesis registration to be completed 15 working days before the defense date. Thus, your dissertation needs to be ready approximately five or six weeks before the defense takes place. See the graduate coordinator for assistance with the PhD Completion Site, blackout dates, conferral/registration deadlines, and for more details about this procedure.

Student Office Space

PhD students are assigned an office space. First-year students are placed in one of two group offices. After the first year, students are moved to offices with more senior students, generally from disparate research areas (unless a faculty member has specifically requested that their students be seated together, and/or has a research lab). Desks, bookshelves, and reasonably comfortable chairs are provided. Students are provided a workstation on the desk, or a monitor if you prefer to use your own laptop/notebook. You may not modify, move, or re-arrange computer components without approval from department lab staff. If you want to modify/move/re-arrange any of the department-provided computing components (including monitors, CPUs, keyboards, mice, network cables, etc.), you should contact labstaff@cs.rochester.edu for approval/assistance. If there is any additional specialized equipment that you need for your research, you should speak with your advisor. Keep in mind that office space should be evenly distributed among occupants. Be considerate of your officemates.

Master's Degree

A Master's degree may be awarded to URCS PhD students when they satisfactorily complete 30 credit hours and either submit a master's report or pass an oral master's exam. A successful area paper can be used as a

master's report. The Master's degree will be conferred on the standard University cycle (May, August, or December) following the submission of the master's report or the master's exam.

Payroll

If you would like your paycheck to be automatically deposited into your checking or savings account, you may do so in HRMS: www.rochester.edu/people by logging in with your NetID and password, and navigating the following: Main Menu>Self Service>Payroll and Compensation>Direct Deposit and filling out the appropriate fields.

Grant Support Acknowledgement

Any article you publish (a Technical Report, conference or journal paper, etc.) must acknowledge the agencies sponsoring your work. This is both an academic/professional and legal/political requirement. Most department students are at least partially supported by a grant. When you are finished writing an article, go to both the department administrator and your advisor to find out which grant(s) have been supporting that particular research. If in doubt as to whether a particular grant applies, it is better to err on the side of caution and include it. Because support changes quite often, it is best to request information at the time you actually need it. In addition to funding agencies, you will need to acknowledge support from any person or organization that provides you with access to resources used in your research—e.g., off-site computers.

Student Travel

The faculty tries, insofar as possible, to underwrite expenses for students attending conferences. The question of whether a trip will be supported, and the level of support, depend on many factors—money available, reason for the trip, etc. For example, travel to a research conference to present a paper (your own or a faculty member's) is of higher priority than travel to a conference to listen, though the latter is often partially supported. In all cases, the question of whether your trip will be supported, and the level of support, should be raised with your advisor at the earliest possible moment (certainly before submission of any paper whose acceptance would require travel). Your advisor will work with you, and sometimes with the Chair, to determine whether funding is available.

After your advisor has determined the source of funding, and you and your advisor have determined the amount of funding, you and your advisor must complete a Graduate Student Travel Request form before you make your travel plans. This form is available from the department coordinator. It identifies the source of funding and any limits and conditions on the funding. All travel forms require the signature of the faculty member who is paying for the travel. Once your signed form is on file with the department coordinator, you can make your travel arrangements. If you do not have an approved Travel Request form on file and have already taken the trip, it is possible that you will not be reimbursed for any expenses.

The University has agreements with a travel agency that can help you make arrangements once your signed Travel Request form is on file. Air and rail tickets purchased through these 17 agencies can be paid for in advance by the Department (note that the process for advance travel tickets must be initiated with the help of the department coordinator). The department can also pay for your conference registration ahead of

time if you have a signed Travel Request form on file. All other covered expenses must be paid out of pocket (keep all original, itemized receipts) and reimbursed upon a student's return. See the department coordinator with any questions.

The department coordinator or administrator can provide you with details about allowable and non-allowable expenses, and the forms of receipts required for reimbursement. Note that certain expenses, notably for entertainment and alcoholic beverages, cannot be charged to federal grants. In addition, some grants require that any air travel be made on a U.S.-flag carrier (though in this case certain exemptions may apply: see https://www.gsa.gov/policy-regulations/policy/travel-management-policy/fly-america-act).

When you return from a trip, you will need to tape your original, itemized receipts down (tape on all four sides of the receipt) on paper (front only) in chronological order. If the receipts are in a language other than English, please provide translation. Please note if the amount paid covers the expenses of more than one person (for example, if you shared the hotel room with another conference attendee and the reimbursement should be split). The department coordinator processes these reimbursements, and should be contacted with any questions.

Getting Help

Your advisor (general, area, or dissertation, as appropriate) should be your first point of contact for help with academic or research issues. For purely administrative matters, you may want to start with the graduate coordinator instead. These two individuals can direct you to a host of other resources as well, for a sympathetic ear, active assistance, or, if all else fails, filing of a formal grievance. Some of these resources are also listed below.

Concerns specific to coursework should be directed to the course instructor. In general, most faculty members wish that students would talk to them more often.

If a situation arises in which you are uncomfortable talking to your advisor – or if you are unhappy with your advisor's response – you can talk directly to the department Chair or to the College-Level Graduate Ombudsperson. The role of the ombudsperson is to provide confidential, impartial, and independent advice. They can act as a sounding board, connect you to others who can help, accompany you in discussions with faculty or administrators, or act as an informal mediator or advocate.

Depending on the issue, you may also want to consult

- The Hajim School Dean of Graduate Studies
- The University Counseling Center (free, confidential psychological assistance)
- The CARE Network (to express a concern [perhaps on behalf of someone else] when you're not sure where to go)
- The University Ombuds Office (for general issues of fairness and inclusion)
- The Employee Assistance Program (for issues around University employment)
- The Title IX Office (for official reporting of sexual misconduct)
- Clergy at the Interfaith Chapel (for help specific to a faith tradition)

- The College Writing Center (for help with written English)
- The International Services Office (for students from outside the US)
- The Office of Disability Services

You can find a listing of resources relating to sexual harassment, discrimination, and retaliation at www.rochester.edu/respect/resources and also a more extensive listing of resources (for all manner of concerns) compiled by the CARE Network here: www.rochester.edu/care/resource-center/