

PhD Program Orientation Fall 2022

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Goal of the PhD program

To Turn Students into Scholars

... who are able to perform high-quality original research
... with preparation in the broad discipline of Computer Science
... and understand the impact of their and others' work
... on their specialized area as well as Science and Society at large

This is usually achieved in multiple steps spread over 5--6 years (more or less)

• We will review these steps and requirements now





Contents

- Academic Progress and Standing
- Registration and Credits
- Support
- Registration for Fall 2022
- Responsible Conduct
- In Conclusion...





CS Department

- Administration
 - Samir Das (Chair)
 - Kathy Germana (Assistant to the Chair)
- Graduate Program
 - C. R. Ramakrishnan (Graduate Program Director)
 - Erez Zadok (Graduate Academic Advisor, MS Program)
 - gradadvising@cs.stonybrook.edu (Graduate Program Coordinator)
- Graduate Admissions
 - Himanshu Gupta (Grad. Admissions Director)
 - Lourdes Hartwell (Admissions Coordinator)
 - Allison Katz (Admissions Coordinator)
- Other Administration
 - Christine Cesaria (Fellowships, compliance, etc.)
 - Susan Cuiffo (Research Payroll)
 - Emily Brosnan & Andrew Solar-Greco (Reimbursements)





Other Important Units

Graduate School

• Broader support, policy making for all graduate programs in the university

Registrar and Bursar's Office

- Enrollment and fees payment
- Visa and Immigration Services (VIS)





Graduate Handbook and FAQ

- Describes everything you need know about MS/PhD program in CS.
- Access from the departmental web page. Go to Students→Graduate.
- Read the latest version.

Read the handbook. Keep a copy under your pillow.





Requirements

Fall 2022 Handbook describes your PhD progress and graduation requirements.



- This is your default set of requirements.
 - At the time of graduation, you may choose a the requirements from a more recent edition of the Handbook (if anything has changed).
 - You cannot mix and match requirements from different years.
 - Generally there may be minor tweaks from year to year, but major changes are infrequent.



PhD Program Structure

- Graduate-Level Courses
 - Timing: mainly in the first 2 years
- Research under supervision of a faculty advisor
 - Timing: throughout the program, but starting no later than at the end of the 2nd semester
 - Begin with critical reading of a research problem
 - Develop into independent and original research
- Teaching (TA responsibilities)
 - Timing: mainly in the first year





Steps and Milestones

1. Qualifier Courses

- Time limit: By the end of 4 semesters
- Strong recommendation: Complete in 3 semesters
- 2. Research Proficiency Exam (RPE)
 - Time Limit: By the end of 4 semesters
 - Earlier completion for research-ready students

3. Preliminary Thesis Proposal (Prelim)

• Complete by end of year 4

4. Thesis Defense

• Complete by end of year 5





Remember Your Goal Do scholarly research to complete your PhD Degree

- Focusing only on how to complete Qualifiers as quickly and easily as possible is a bad idea
- Focusing on research to the detriment of coursework is not recommended either
- In your first year, you should be **judicious** with courses so that they:
 - 1. help you identify and begin work with a research advisor
 - 2. give you background in your expected area of research
 - 3. help you complete Qualifier requirements

Shortcuts don't help!





1. Qualifiers

Complete **5 Graduate Courses** with grade **A- or better**, with following restrictions:



- At least 4 courses, covering 3 breadth areas:
 - Theory, Systems, IIS.
- The 5th course may be any regularly-scheduled graduate lecture course, with a few restrictions; see Handbook for details.

Required: Complete in 4 semesters.

Enforced: Complete these in 3 semesters unless research progress is extraordinary; research-ready students who finish their RPE early may take 4 semesters.





Sample Plan for First 2 Years

1st semester: 2+ quals completed, narrow down dissertation advisor

- If you already have a dissertation advisor, follow their advice regarding your schedule.
- Otherwise, enroll in classes and seminars taught by prospective advisors; actively
 participate in research with prospective advisors.

2nd semester: 2+ additional quals completed, have dissertation advisor

1st summer: research with dissertation advisor

(Don't disappear in summer!)

3rd **semester**: finish any remaining quals, research with advisor

4th **semester:** take any other course you want/need, complete research for RPE

2nd summer: finish RPE (*before* summer if going in internship!)

Many students finish quals requirements in 1st year.



Theory Qualifiers

- CSE 512: Machine Learning
- CSE 526: Principles of Prog. Lang.
- CSE 540: Theory of Computation
- CSE 541: Logic in Computer Science
- CSE 547: Discrete Mathematics
- CSE 548: Analysis of Algorithms
- CSE 549: Computational Biology







Systems Qualifiers

- CSE 502: Computer Architecture
- CSE 504: Compiler Design
- CSE 506: Operating Systems
- CSE 508: Network Security
- CSE 509: Computer System Security
- CSE 532: Database Systems
- CSE 534: Fundamentals of Computer Networks
- CSE 535: Distributed Systems





IIS Qualifiers

- CSE 505: Computing with Logic
- CSE 519: Data Science Fundamentals
- CSE 527: Introduction to Computer Vision
- CSE 528: Computer Graphics
- CSE 537: Artificial Intelligence
- CSE 538: Natural Language Processing
- CSE 564: Visualization







Academic Advising

Every incoming PhD student has been assigned an "Academic Advisor".

- The academic advisor will help you plan your qualifier and other courses during your first year here.
- They will also guide you to find and begin research with your "Dissertation Advisor".
- Academic advisor may not necessarily be in your research area, but will still provide invaluable advice to guide your progress.
- Email your academic advisor asap and set up an appointment to meet with them.





2. RPE

Research Proficiency Exam



Designed to test basic ability to critically read papers, synthesize information, understand problems, and formalize arguments.

- When working with an advisor, acquire significant familiarity with one research problem area
- Survey important papers in a narrow area; synthesize info. on their contribution
- Write a formal RPE report
- Make an hour-long presentation before an RPE committee* (open to all)
- Expected completion: by the end of Year 2

*See Handbook on rules for committee composition ...



3. Prelim

Thesis proposal

FAR



- Sometimes called by its old name "Prelim Exam", this is a proposal of your thesis to a faculty committee
- Generally done when the thesis problem is clear
- The proposal is a detailed report on what has been done so far, and
 - lists what will be completed before the thesis is finished.
- There is a formal proposal presentation to the committee* (others may attend by invitation)
- Expected completion: end of year 4 / early year 5.

*See Handbook on rules for committee composition



4. Defense

- Complete and submit dissertation to a committee (with at least one external member)
- Make a formal presentation to the committee* (open to all)
- Upon successful completion, celebrate (and answer questions on where you are headed next).

*See Handbook on rules for committee composition







Good Standing

- Academic progress is evaluated by entire faculty
 - All-hands faculty meetings held twice a year
 - Progress in qualifier and other courses, GPA
 - Advisor report on research progress
 - Student's self-report on research progress
 - TA evaluations (by supervising faculty)
 - Poor performance may lead to immediate loss of good standing
- Graduate School criteria (common to all graduate programs):
 - GPA ≥ 3.0, no incompletes ("I" grades)
- Loss of good standing may lead to:
 - Loss of financial support, tuition scholarship

FAR • Dismissal from program



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Graduate Credits

PhD students must accumulate at least **20 credits** from non-generic CS graduate courses.

- Credits for generic courses such as CSE 593, 600, 698, 699 *do not count*.
- All lecture courses, special and advanced topic courses and seminars (except CSE 600) are included in this count.
- Note that qualifier courses alone contribute at least 15 credits.





CSE 600

Mandatory seminar: "Research in Modern Computer Science"

- Typically on Fridays, 2:30-4:00pm
- Faculty present their current research
 - Occasionally we have visitors as well
- Gives you a broad overview of current research in CS
- All PhD students must enroll in 2 semesters of CSE 600
 - You can register for 0/1 credit
 - The requirement is 2 semesters with "S" grades; not 2 credits.
- S/U grading based on attendance (>70%)



CSE 698

Teaching Practicum

- All PhD students must enroll in at least 1 semester of CSE 698
- 0-3 credits of registration in any semester
 - Note: requirement is a passing grade in 1 semester, not number of credits.
- Common use: Register in 698 along with your TA work
- New for Fall'22: All TAs will go through two additional mandatory training sessions organized by the department, to be held in Sep/Oct. *Details coming soon*.





Academic Level and 'Full Time'

- Level:
 - G3 when admitted with a BS degree
 - G4 after completion of 24 graduate credits
 - G5 after completing all requirements except dissertation
- To be considered full-time
 - All grad students must be registered for at least 9 graduate credits
- The following students must be full-time:
 - International students on visa
 - Students getting assistantships
 - Students in University Housing
- Tuition Scholarship:
 - G3: 12 credits (but you can register for up to 18 "for free")
 - G4/G5: 9 credits (12-18 if you need OAE classes, email Kathy)





Find Your Academic Level

On SOLAR:

Student Records & Registration —> Academic Planning —> My Planner —> My Academics





Registration for G3

- Supported G3 students
 - Must register for at least 9 credits
 - Get tuition scholarship for up to 18 credits
- G3 students are recommended to take **12** credits:
 - 3 qualifier courses (9 credits)
 - 1 credit of CSE 600
 - 1 credit of CSE 698
 - 1-credit seminar (other than 600) in your area of choice or independent study (593) with your advisor.
 - To this, add OAE courses as needed.
- Speak to your academic advisor.
 - You may reduce qualifier load if you want to get an early start into research.





Registration for G4 with OAE reqs.

G4 students

- Must register for at least 9 credits
- If supported, get tuition scholarship for **9 credits**
- **BUT**: if you have OAE requirements, your scholarship can be increased to cover 12-18 credits
 - Send email to Kathy Germana (kathy@cs) if this applies to you and you've not already spoken to her.

Such G4 students are recommended to follow the same recipe as G3 (previous slide)

• Speak to your academic advisor.





Registration for Other G4s

G4 students

- Must register for at least 9 credits
- If supported, but do not have OAE requirements, get tuition scholarship only for 9 credits

Such G4 students are recommended to take **exactly 9** credits:

- 3 qualifier courses (9 credits)
- Register for 0 credits of CSE 600
- Register for 0 credits of CSE 698
- Audit a seminar (other than 600) in your area of choice
- Speak to your academic advisor





Registration for G5

G5 stands for "Advanced to Candidacy"

- You get to G5 after you complete your qualifiers and RPE, and complete all requirements except dissertation.
- When you get to G5, you become a "PhD Candidate"
- 9 credits of tuition for G5 students are paid by Graduate School
- G5 students may register only for Seminars; CSE 696/697 (Internship); or CSE 699, CSE 700, or CSE 701 (Dissertation Research)
- You can take lecture courses as a G5 only under extraordinary circumstances with prior permission from GPD.
- So satisfy all your course needs before you advance!





Registration in non-CS Courses

- Only CSE courses count towards graduation
- If you have a tuition scholarship, only CSE and OAE courses will be covered under that scholarship, by default.
- If you want to take a non-CSE course, you will need explicit permission from your advisor as well as the Grad Program Director.





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Financial Support

- All **PhD** TA/RA positions come with tuition & fee scholarship
- Assistantships are contingent on maintaining full-time status and good academic standing
- TA offers cover Fall and Spring semesters
- Summer RA supplement covers rest of the year (if a faculty advisor is willing to provide support)
- TA-ships for Fall/Spring semesters are handled centrally by the graduate program
- Limited number of TA-ships may be available over the Summer, but are completely managed by individual instructors
- Domestic students who are not NY residents now should become NY residents in their first year to remain eligible for tuition waivers





Teaching Assistantship

- 15-20 hours per week, assisting a faculty member in instruction (holding labs, teaching recitations, grading, etc.)
- TAs <u>may</u> register for Teaching Practicum (CSE 698) for credit
- CSE 698 satisfies grad school teaching requirement
- New for Fall'22: All TAs will go through two additional mandatory training sessions organized by the department, to be held in Sep/Oct. *Details coming soon*.
- TA work is a part of a student's portfolio that is reviewed during PhD Student Evaluation meetings
- Take TA-ship seriously: Poor TA performance will lead immediately to "Not in Good Standing"





Research Assistantship

- 15-20 hours per week, assisting a faculty member, usually the thesis advisor, in research
- Paid by individual faculty from their research grants
- Usually, students become RAs in their first **summer**, and continue as RAs until graduation





Internships

Note: internship is <u>not</u> a requirement

• You can get credit for internships (CSE 696/697)

International students can do such internships using Curricular Practical Training (CPT).

- CPT eligibility:
 - To be eligible for CPT, you must have been at Stony Brook for at least 2 regular semesters, be in good standing, and not have pending ("I") grades.
 - CPTs are generally approved for summer only.
 - CPTs for Fall/Spring needs to be directly related to your research.





MS Degree

- PhD students can get an MS "on the way"
- 1 year after advancing to candidacy (G5)
- Needs approval of your dissertation advisor
- Research credits and RPE will be used in lieu of MS thesis (up to 9 credits)
- Other 22 credits for the MS can come from lecture courses and seminars
- PhD students leaving the program for MS need to satisfy all MS requirements
- Note: PhD students cannot register for "MS-Only Courses": CSE 522, 523, 524, 599





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Important Dates

Be familiar with graduate calendar

(www.stonybrook.edu \rightarrow Academics \rightarrow Academic Calendars)

- Aug 28 drop deadline w/o tuition penalty
- Sep 2, 4pm Registration changes on SOLAR (drops may incur tuition penalty)
- Sep 3-12 swap by petition





Full Classes

PhD students get priority placement in classes

If you want to get into an otherwise full class, email gradadvising@cs.stonybrook.edu with your ID number and the class you want to get into.

NOTE: permissions can be issued only if there is physical space in the classroom.





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Responsible Conduct

- Ethical Behavior
- Professional Conduct
- Authorship and plagiarism
- Safety





Ethical Behavior

- Treat others (as well as their work and products) with respect
- Treat everyone over who you have some power (e.g., TA/student) fairly
- Ensure that the results of your work are a reliable statement of its outcomes.
 - Results in your papers must be true to the best of your knowledge
 - No misrepresentations, obfuscations, "wishful thinking"





Professional Conduct

- Complete high-quality work in a timely manner
- Maintain a safe and welcoming work environment
- Live up to your promises
 - So make promises with care
 - E.g., when you accept a job or internship offer, you cannot continue to interview or accept another offer!





Authorship and Plagiarism

- Your work must be yours!
- Don't put your name on a paper that you did not contribute to
- Don't put your friend's name on your paper just to give him/her a boost
- Cite any results that you quote from elsewhere
- Give credit where credit is due





Safety "First, do no harm"

- Take steps to prevent yourself and others from getting hurt from your work.
- Example:
 - Care of data from medical records





RCRS

Responsible Conduct in Research & Scholarship

- Federal funding agencies require every researcher to undergo training and earn RCRS credits.
- Such training is especially critical when handling sensitive data (human subjects, health and social media data)
 - No matter whether the research is federally funded or not.
- University is ensuring that every research-funded graduate student is appropriately trained.
 - We have set up procedures within our department to have every graduate student trained.
 - RCRS will become a part of "Good Standing" requirement.





Academic Dishonesty

- Do your own work for all exams and assigned class work.
- Do not copy from anywhere, discuss with anybody, solve problems in group.
 - Unless specifically allowed by an explicit class policy.
 - Check with instructor on what is allowed if looking for solutions (e.g., github). If allowed, cite sources where you got help.
- Guard your work so that others cannot copy.

Serious consequences:

- Loss of grade: Many profs will give 'F' in the course.
- Possible dismissal from program.





Research Misconduct

• Plagiarism

• Example: copy from somebody else's paper and use it as part/whole of your project report, thesis.

• Falsification

- Fabrication: Make up data, results.
- Manipulation: Manipulate an experiment to hide actual performance and to show what you want.
- Obfuscation: Hide critical facts, but reveal some others.
- Serious consequences on your graduate study. Degree may be retracted even <u>after graduation</u>.
- If you feel pressured, talk to advisor or graduate program staff.





Professional Misconduct

- Accepting an internship/job offer (via campus career center or otherwise), and then turning it down later
 - Reflects poorly on you as well as the department
 - Employers may not come for campus interviews for future students.
- Accepting an RA-ship from one professor, and turning it down later
 - Professors work often do collaborative work, and do not want to "poach" students from one another.
 - If you are unsure what to do with one RA-ship offer, be open about it. Come and talk to me!
- False representation in resume for jobs/internships.
 - Serious consequences on your graduate study. Possibilities exist for retraction of degree even <u>after graduation</u>.





Sexual Misconduct

- Sexual assault is a serious crime
- Sexual harassment (unwanted advances, hostile work environment,...) are processed seriously
 - Faculty have "mandatory reporting responsibilities"
 - Office of Student Conduct and Community Standards, Title XI offices will investigate and levy significant penalties.
- Micro-agressions (stereotyping, disrespect, interruptions during meetings/conversations) create an unwelcome and unproductive environment.





Ethical Violations: Procedures Violations reported to Program Director.

- Accusations and penalties for violations may be appealed to special graduate committee
 - Formal proceedings, judged by a committee of 2 graduate students and 2 faculty
 - Recommendations sent to Program Director
- For serious violations, finding of guilt may lead to dismissal from program.
- Minor violations are recorded in student's file.
 - These records are destroyed at graduation time if there are no other violations.
 - Second violation is grounds for dismissal from the program.



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PhD Program

Program's objective is to prepare you for a successful research career.

The program provides a framework for a student to

- Obtain *breadth* in CS [Qualifiers]
- Develop skills to identify significant research topics [RPE]
- Acquire *depth* of understanding in a chosen area [Prelim]
- Gain ability to perform and evaluate original research [Dissertation & Defense]

The program's structure is designed to evaluate progress towards these goals.







Next Steps

• Very important:

- Get departmental email id (xxx@cs.stonybrook.edu)
- ... which is on grads@cs.stonybrook.edu email list.
- Important messages sent to these addresses. No excuse for not reading them.
- Review Graduate Handbook and FAQs.
- Be familiar with registration calendar.
- Ensure access to GRAD forum on Piazza:

piazza.com/stonybrook/spring2018/grad/home

Send email to gradadvising@cs.stonybrook.edu for access





Questions?



