Stony Brook University

Program Orientation for **PhD in CS**

Program Requirements

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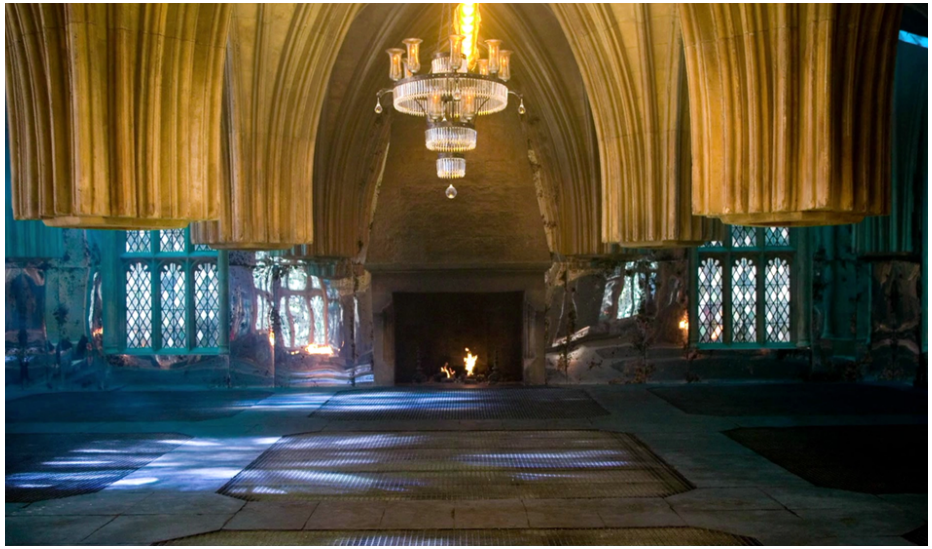
Program Information

- Program Overview
- **Degree Requirements**
- Registration
- Financial Support
- Ethics and Research Responsibility

Requirements

Fall 2020 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 form 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 at least 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**
   - Time Limit: By the end of 4 semesters
   - Earlier completion for research-ready students
3. **Preliminary Thesis Proposal**
   - 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 not recommended
- Focusing on research to the detriment of coursework is not recommended either
- In your first year, you should select courses judiciously so that they:
  - Help you complete Qualifier requirements
  - Give you background in your expected area of research
  - Help you identify and begin work with a research advisor
  - Shortcuts don't help!

1. Qualifiers

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

- At least 4 courses, covering at least 3 breadth areas:
  - Theory, Software, Systems, IIS.
- The 5th course may be any non-generic graduate lecture course, i.e.:
  - Any CSE 5xx except 500, 522, 523, 524, 550, 587, 590—599
  - Any course in set CSE 601-638.

***Required**: Complete in 4 semesters.*

***Recommended**: Complete in 3 semesters; 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

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

1st summer: research with dissertation advisor

*(**IMPORTANT**: Don't disappear in summer!)*

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

4th semester: take any other course you want/need, research with advisor

2nd summer: complete research for RPE, finish RPE by end.

Many (most?) students finish quals requirements in 1st year.

Theory Qualifiers

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

Software Qualifiers

- CSE 504: Compiler Design
- CSE 505: Computing with Logic
- CSE 526: Principles Programming Languages
- CSE 532: Theory of Database Systems
- CSE 535: Distributed Systems

Systems Qualifiers

- CSE 502: Computer Architecture
- CSE 506: Operating Systems
- CSE 508: Network Security
- CSE 509: Computer System Security
- CSE 534: Fundamentals of Computer Networks

IIS Qualifiers

- 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

[IIS = Information and Intelligent Systems]

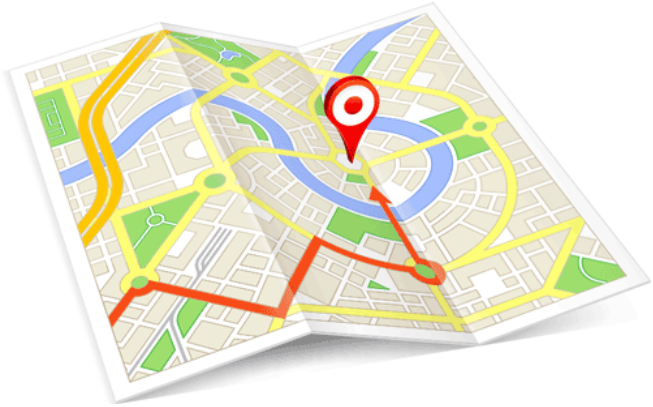
2. RPE

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)
- Required completion: by the end of Year 2.

3. Prelim



Thesis proposal

- Formerly, this was a formal exam with a pass/retake/fail (hence sometimes called by its old name “Prelim Exam”)
- Now 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)

4. Defense

- Complete and submit dissertation to a committee (with one external member)
- Make a formal presentation to the committee (open to all)

- Upon successful completion, celebrate (and answer countless questions on where you are headed next).

Good Standing

- Academic progress is evaluated by entire faculty
  - PhD Review 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
- Loss of good standing may lead to:
  - Loss of financial support, tuition scholarship
  - Dismissal from program

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: “Ongoing Research Seminar”

- Generally, Fridays 2:30-4:00
- 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 of enrollment; not 2 credits.
- S/U grading based on attendance (>70%)

CSE 698

Teaching Practicum

- Claim credit for your TA work
- All PhD students must enroll in at least 1 semester of CSE 698
- 0-3 credits of registration in any semester
  - Again: requirement is enrollment in 1 semester, not number of credits.

MS on the way

- PhD students can get an MS while continuing their doctoral studies
- Students may opt for MS on the way, a year after advancing to candidacy
  - Needs approval of the dissertation advisor
- Research credits and RPE will be used in lieu of MS thesis (up to 9 credits)
- Otherwise, must meet all MS requirements.
  - Note: PhD students cannot register for “MS-Only Courses”: CSE 522, 523, 524, 596, 597, or 599.

Other Program Information

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