

Qualifying Exam for Ph.D. in Informatics

PURPOSE: The qualifying examination is a University-mandated procedure to assess whether the student is capable of conducting doctoral-level research. Toward this goal, the Ph.D. qualifying examination of the College of Information Sciences and Technology assesses the student's ability to reason about a research topic of personal interest from multiple perspectives (e.g., as represented by the core curriculum). In keeping with Penn State Graduate School policies to ensure high-level competency in use of the English language, the exam also assesses written and oral communication fluency.

COMMITTEE: The qualifying examination is administered by a committee assigned by the college. There will be as many committees as necessary to cover the number and diversity of students to be examined. Voting members of the committee will consist of three IST graduate faculty members. Ideally, committee members will represent three complementary academic backgrounds, reflecting the breadth of research in IST. Each committee will be responsible for examining a subset of the candidates (e.g., 4-5).

ELIGIBILITY: To be eligible to take the qualifying exam a student must be enrolled in the Informatics PhD. Program at Penn State. Full-time students should complete 18 graduate credits at Penn State prior to administration of the exam; different requirements may apply to part-time students and will be determined in consultation with the Graduate Advisory Committee. The student must have a minimum cumulative GPA of 3.0. The student must have completed the core course requirements (or completed some of them and be enrolled in courses to complete the remainder), with a grade of B- or higher in each core course that has been completed. The student should also have the support of her/his advisor to continue with her/his PhD studies as indicated by a letter of support (see Portfolio below).

There are three parts to the overall exam-- Portfolio, Written and Oral.

PART 1: PORTFOLIO

From the student: Each student eligible to take the qualifying exam will submit a Portfolio to the Qualifying Committee by the date specified (this may be adjusted according to other schedule constraints each year, but typically is 4-6 weeks prior to the exam itself). The Portfolio is submitted as a single document in PDF form and should include:

1. A current curriculum vitae; this version of the CV should include publications or other achievements that are under peer review, even if not yet accepted.
2. A self-reported list of all graduate IST courses taken thus far with corresponding grades; courses currently in progress should be listed with an estimated grade.
3. A 500-word Abstract. The student, with his or her adviser's assistance, will identify a research area that he or she is currently interested in pursuing. Following this he or she will *independently* write an abstract of approximately 500 words that introduces the research topic and directions.
 - The 500 words does not count the bibliography of scientific research cited in the abstract, so be careful to cite relevant research and to include complete and correct bibliography entries (e.g., using a standard and usable format such as APA, Chicago, etc.).
 - Although research *discussions* between student and adviser are expected and encouraged, the qualifying exam abstract will be written by the student.

From the advisor:

A confidential letter to the qualifying committee detailing the student's readiness and potential to do research. This may be submitted as an email memo or as an attachment, and should be submitted to Graduate Programs no later than the *Friday after final exams*.

From the instructors of foundational PhD courses:

Instructors will be asked to provide qualitative feedback for first-year IST Ph.D. students taking their courses. They will also provide a copy of their syllabus that includes information about topics and activities covered in the course, so that GAC can reason for this to develop synthetic exam prompts,

Part 2: WRITTEN EXAMINATIONS

Question Writing: Working from the submitted research abstract and list of courses, GAC members will write a custom prompt for each student. The general requirements will be equivalent across all students: a) expand the research abstract to develop a creative research proposal, including relevant literature in framing the problem or opportunity, and providing rationale for the research methods proposed and outcomes expected; and b) demonstrate interdisciplinary research thinking in the proposal, by synthesizing literature, concepts and methods that are outside the focus of the abstract, but covered by courses that the student has taken (or is taking). Each student's question will identify which 1-2 interdisciplinary perspectives should be integrated into the research proposal.

The resulting proposal should consist of approximately 10,000 words (not including references, figures or text tables). It should demonstrate that students can make sense of research literature both inside and outside their current research focus areas; and that they can apply these new understandings to identify and discuss implications for their own research interests. Students should also follow standard guidelines for citing references and formatting their text, including labeling and referring to figures or tables. *Students may not seek or receive any outside human help in searching for literature or in formulating and writing the research proposal; this exam is an assessment of individual aptitudes and communication competencies.*

Question Answering: The research proposal prompt will be distributed to the student on the **Monday morning that immediately follows final exams week**. After receiving the questions, students will have 24 hours to send via email a request for question clarification to the Director of Doctoral Programs, who will share as needed with GAC members who prepared the prompt. Requests for clarification must be brief and focus on issues relating to terminology or phrasing; they should not preview literature search directions or arguments that the student plans to make. If the request goes beyond these guidelines, the GAC may indicate that no further clarification will be given. All clarification responses will be provided within 24 hours of receiving the request.

Written research proposals must be submitted as a PDF file, sent as an attachment to email sent to Graduate Programs (graduateprograms@ist.psu.edu) **by 8am on the Friday after receiving the prompts**; the intention is to provide four full days to prepare the written responses). Exams not submitted by this time will be graded **Fail**.

Written exam grading: Written exam grading will take place on as soon as possible after submission. Exams for each student assigned to the committee will be available, along with initialized copies of the rubrics for the portfolios and written exams. Each committee member will evaluate all student portfolios and written exams in his or her group, uploading copies of the completed rubrics by **midnight the day before the oral exams take place**.

PART 3: ORAL EXAMINATIONS

Oral examinations will take place on the Tuesday following submissions of the written exams; the intention is to allow at least two full business days for exam review/evaluation (plus the weekend). The Qualifying Committee meets with each student for 60 minutes, with an additional half-hour allotted for synthesizing the evaluations. An oral exam will take place even if a majority of the committee has recommended a failing grade for a student's portfolio and/or written exam. During the exam, the student will first present the research proposal (15 minutes; the preparation of this presentation must be the sole work of the student). The committee members will then ask questions that may be related to any part of the exam, including the portfolio, the course history, the written research proposal or the presentation.

Oral exam grading: Immediately following the oral exam, the committee will take up to 30 minutes to discuss the oral exam performance, and to prepare consensus rubrics for the portfolio, written and oral exam, as well as the final overall recommendation. These rubrics will be distributed to the students as feedback after the exam. The rubrics must be uploaded to the Committee Exam folder **no later than midnight on the day of the oral exam.**

PART 4: EXAM OUTCOMES

For students who receive a passing grade for the Qualifying Exam, no further action is required: they will receive the feedback created as part of the exam and will be encouraged to begin preparing for their next milestone (Comprehensive Exam). For students who fail, counseling will ensue to determine whether conversion to the Master program is warranted or whether the student should terminate his or her studies. Note that changing to the Master program is not automatic and will depend on appropriate paperwork being completed by the student.

Exam appeals: The outcome determined by the exam committee will be shared as soon as possible with the student, the student's adviser, and the committee. The student, adviser and/or any dissenting committee member will have **48 hours** to register concerns about the outcome. Such concerns should be submitted to the Director of Doctoral Programs, who will share with members of GAC:

- Appeals concerning an exam outcome will be reviewed by GAC, who will appoint an appeal committee of two graduate faculty members not part of the original committee. Any aspect of the exam grading may be the subject of an appeal.
- The appeal committee will review the relevant qualifying exam documents and comments and submit a recommendation to GAC within one week; GAC will review and decide on the appeal and communicate this to the parties involved, no later than two weeks after the initial appeal. Any GAC members involved in the exam being appealed (as advisor or as exam committee member) will be recused from the appeal process.
- If the decision of the appeal committee is contested, a final review and decision will be made by the Associate Dean for Undergraduate and Graduate Studies, no later than three weeks after the initial appeal.