

Ph.D. Requirements

Ph.D. students have to select two [minor fields](#). The special committee is made up of at least your major advisor (probably Vivek if you're reading this) and your minor advisors, and might contain other members whose input would be valuable.

Research Requirements

A Ph.D. dissertation corresponds to roughly 3 papers. While there doesn't have to be a specific throughline across those papers, there typically will be to reflect your increasing depth of understanding and ability. These papers should be your top priority once you start doing your research, but you can (and are encouraged to, so long as you're making sustained progress on your dissertation research) collaborate with others and be a co-author on other papers.

Course Loads

Students in our group typically take 1-3 courses a semester, with a heavier course load in the first year, tapering off afterwards so students are able to spend more time on their research. The heavier first-year load allows students to build a foundation and explore potential minors.

Course Requirements

Course requirements depend on the major field.

- **BEE:** The BEE field has no formal requirements.
- **CEE:** The CEE field (specifically the EWRS concentration) has no core course requirements, but you need to take 9-12 credits (not necessarily from CEE) ahead of your [Q exam](#).
- **SYSEN:** The SYSEN field has [more requirements](#) than some others. You must take:
 - SYSEN 6000 (Foundations of Complex Systems);
 - SYSEN 6150 (Model-Based Systems Engineering);
 - SYSEN 8000 (Systems Doctoral Colloquium);
 - SYSEN 8100 (Systems Seminar Series).

Beyond those requirements, you will need to gain sufficient background (at the discretion of your committee) in the following areas: * Human-Centered Modeling; * Risk, Uncertainty, Stochastic Modeling, and Learning; * System Architecture, Design, and Optimization; * Complex Systems Science.

Exams

There are a few milestones (marked by the various exams) for graduate students as they progress through their program, regardless of their major.

Scheduling Exams

Exams must be scheduled with at least two weeks notice through [the Graduate School](#). You'll need more notice than this, anyway, to get all of your committee members scheduled, so there's no reason to wait once you have a date and time.

Qualifying (Q) Exams

This is only required by a few majors (SYSEN and CEE are the most relevant for us).

Failing the Q Exam

Failing the Q Exam will mean you are no longer able to continue in the Ph.D. program.

- **CEE:** The CEE Q Exam must be taken after the end of the 2nd or 3rd semester, and after 9 credits (after 2 semesters) or 12 credits (after 3 semesters). The course requirements won't be a problem for our group; you're likely to take 9 credits the first semester. The exam committee is made up of EWRS faculty members and involves presenting on a relevant paper which Vivek will share with you ahead of time.
- **SYSEN:** The SYSEN Q Exam is administered by the field sometime between August and January of Year 2.

A Exam

The A Exam is the equivalent of a preliminary or comprehensive exam, and usually occurs after the student has finished the analysis for their first paper¹, likely in year 2 or 3 (the Graduate School requires this to be completed before the

beginning of the 7th semester; there is no real advantage to taking this earlier than necessary).

The A Exam is an oral exam, and is administered by your committee. You should be prepared to present and discuss your paper and a proposal for the rest of your Ph.D. research.

B Exam

The B Exam is your dissertation defense, and must be taken at least two semesters after your A Exam. This is an oral exam and will be administered by your committee.

Student Progress Reports

Every year, we will fill out a Student Progress Report (SPR). The SPR has two components. First, you will fill out a self-assessment of your progress and goals, and then I will assess your progress and what needs to be improved (if anything). Ideally, nothing in the review is a surprise, as we should have discussed any issues of concern during our one-on-one meetings.

1. Submission is not required, but you want to have a narrative and figures, which means the paper should be effectively written. ■

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