

Analytical Sciences Path Requirements

YEAR 1:

- *Advisory Exams*
- *Start Coursework*

The Core (major) courses for Analytical Sciences are:

- **Chemistry 621: Instrumental Analysis**
 - **Any two of the following courses:** Chem 622, 623, 624, 625, 626, 627, 628 and Chem 630.
 - Other graduate courses in line with student interests should be taken to fulfill the minor course work requirement, and a Minor Agreement Form should be filed in the first semester, after joining a research group. Students should consult closely with their faculty advisor in the fall/PI in the spring with regard to these courses.
 - Enroll in and attend Analytical seminars
- *Join a research group*
 - Attend research overviews from Chemistry department faculty (first few weeks of fall term).
 - Carry out three rotations.
 - No one can join a research group before the November selection deadline.
 - *Assemble faculty mentoring committee* by the end of summer. The mentor committee will consist of three faculty members, including the research advisor. The mentor committee chair will not be the research advisor.

YEAR 2:

- *Thesis Preliminary Examination*
 - Written component: Employ either a standard grant format (e.g. NIH, DOE, PRF, and NSF) or another format suggested by major professor. Give to the mentoring committee seven days before the exam, to be completed by the end of the spring semester.
 - Oral component: A 20-25 minute presentation (open to the public) with subsequent questions from the mentoring committee (not open to the public).

The written summary and oral presentation should outline the background, aims, and methods of the Ph.D. research that will be pursued. If the student has obtained preliminary results, these should also be presented. A period of questioning by the mentoring committee will follow. For example, the student may be called upon to answer questions about pertinent background literature, to demonstrate familiarity with some of the techniques discussed, or to describe the significance of the research and the rationale for the methods to be employed.

YEAR 3:

- *Original Research Proposal Examination*
 - Written component: Employ either a standard grant format (e.g. NIH, DOE, PRF, and NSF) or another format suggested by major professor. Give to the mentoring committee seven days before the exam, to be completed by the end of the spring semester.
 - Oral component: A 20-25 minute presentation (open to the public) with subsequent questions from the mentoring committee (not open to the public).

The purpose of the original research proposal is to provide experiences that develop the skills required to function as an independent scientist and diversify students' background and knowledge. Students first need to identify a research goal outside the areas of research represented in their research group that is significant, achievable, and acceptable to their major professor. They must then develop a suitable research plan that describes the major steps and techniques required to reach that goal, and provide arguments for its feasibility. The student's mentoring committee will evaluate the written proposal and oral presentation. It is important that the chair of the mentoring committee and the student's major professor are present for the research proposal.

YEAR 4:• *Fourth-Year Presentation*

- Oral component: A presentation with a maximum duration of 10 minutes to the faculty committee, followed by a discussion.
- The presentation should provide a brief summary of the research done and a plan of what the student needs to do in order to complete the degree, including a tentative time-line.

YEAR ~5:• *Dissertation Defense*

The **Written Ph.D. thesis** must be submitted to the candidate's committee at least one week prior to the **Oral defense** date. Students who have not set a date for their dissertation defense by the end of their fifth year will meet with their committee members at least once annually until completion of the degree.