

### **#1 Core course work requirements: Physical Chemistry**

1. Take required courses Chem 661 and Chem 675
2. Begin accumulating minor credits and take elective Physical major courses
3. Enroll in and attend Physical seminars (Chem 960)
4. The student will also have to satisfy the minor requirements set by the university and file a Minor Agreement Form (first semester, after joining research group)

### **#2 Thesis preliminary exam format: Physical Chemistry**

1. Written component: A 1-2 page written summary (given to the committee seven days before the exam) completed by the end of the spring semester.
2. Oral component: A 20-25 minute presentation (open to the public) with subsequent questions from the mentor 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 mentor 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. The mentor committee will consist of three faculty members, including the research advisor. The mentor committee chair will not be the research advisor.

### **#3 Original research proposal format: Physical Chemistry**

1. Written component: Format suggested by the major professor
2. Oral component: A 25-minute presentation with subsequent questions from the mentor 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 mentor committee will evaluate the written proposal and oral presentation. It is important that the chair of the mentor committee and the student's major professor are present for the research proposal.

### **#4 Fourth year presentation format: Physical Chemistry**

1. Oral component: A presentation with a maximum duration of 10 minutes to the faculty committee, followed by a discussion.
2. 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.