



University of California, Santa Barbara
Program Learning Outcomes

PhD in Chemistry

Upon graduation with a PhD in Chemistry:

Core Knowledge

- Students will be able to demonstrate a broad knowledge of areas cutting across the fields of chemistry and biochemistry, which include interdisciplinary areas with elements of organic, inorganic, materials, physical, theoretical, and biological chemistry.
- Students will be able to demonstrate a deep understanding and expertise in at least one select area of specialization in chemistry forming the focus of their dissertation topic.

Research Methods and Analysis:

- Students will be able to identify and understand the range of qualitative and quantitative methodologies typically used in research in the chemical sciences.
- Students will be able to discover, critically evaluate, and systematically analyze published research in their field.
- Students will be able to plan and execute an original research project, analyze relevant findings, and organize results into a coherent argument.
- Students will be aware of and apply the necessary practices to ensure safety in the laboratory.

Pedagogy

- Students will be able to communicate technical material to audiences ranging from general to specialized.
- Students will be able to present their research effectively through oral presentations and through the development of supporting materials as appropriate.
- Students will possess classroom management skills, techniques for effective lecturing, and methods for guiding and assessing undergraduate students.

Scholarly Communication

- Students will be able to create effective written technical arguments that contribute to the understanding of the field by their peers.
- Students will be able to review and cogently synthesize relevant literature.

Continued on Page 2

University of California, Santa Barbara Program Learning Outcomes, continued

- Students will write in a level and style of English consistent with that found in leading academic conferences and journals.

Professionalism

- Students will be able to articulate the importance of their research to their professional communities.
- Students will be familiar with the relevant professional societies including, but not limited to, the American Chemical Society (ACS) and the American Association for the Advancement of Science (AAAS).
- Students will be aware of their career options post-graduation, both industrial and academic.
- Students will demonstrate a commitment to fundamental principles of ethical professional conduct.

Independent Research

- Students will demonstrate an ability to develop their own research projects that meet high standards of theoretical and methodological rigor.
- Students will produce scholarship that is comparable in scope and format to articles, books, and conference papers that appear in leading peer reviewed venues and presses in the fields of chemistry and biochemistry.