

BIOPHYSICS

Courses offered by the Biophysics Program are listed under the subject code BIOPHYS on the Stanford Bulletin's ExploreCourses web site.

The Biophysics Program offers instruction and research opportunities leading to the Ph.D. in Biophysics. Students admitted to the program may perform their graduate research in any appropriate department.

The Stanford Biophysics Program is an interdisciplinary, interdepartmental training program leading to the Ph.D. Degree in biophysics. The program centers on understanding biological function in terms of physical and chemical principles. The Program comprises faculty from 16 departments in the Schools of Humanities and Sciences, Medicine, Engineering, and the Stanford Synchrotron Radiation Laboratory. Research in the Program involves two overlapping branches of biophysics: the application of physical and chemical principles and methods to solving biological problems, and the development of new methods.

The Biophysics Program aims to train students in quantitative approaches to biological problems, while also developing their perspective in choosing forefront biological problems. A balanced academic program is tailored to the diverse backgrounds of the students. The program requires graduate-level coursework in physical and biological sciences, participation in seminar series, and most importantly achievement of a high level of proficiency in independent research.

Learning Outcomes (Graduate)

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Biophysics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Biophysics and to interpret and present the results of such research.

Graduate Program in Biophysics

For information on the University's basic requirements for the Ph.D. degree, see the "Graduate Degrees (<http://www.stanford.edu/dept/registrar/bulletin/4901.htm>)" section of this bulletin.

A small number of qualified applicants are admitted to the program each year. Applicants should present strong undergraduate backgrounds in the physical sciences and mathematics. The graduate course program, beyond the stated requirements, is worked out for each student individually with the help of appropriate advisers from the Committee on Biophysics.

The requirements and recommendations for applying to the Ph.D. Program in Biophysics include:

		Units
CHEM 131	Organic Polyfunctional Compounds	3
CHEM 171	Physical Chemistry I	3
CHEM 173	Physical Chemistry II	3
CHEM 175	Physical Chemistry III	3
BIOC 200	Applied Biochemistry	2

Ph.D. students in the Program in Biophysics are required to complete the following course requirements:

		Units
BIOPHYS 241 or BIOC 300A	Biological Macromolecules Molecular and Cellular Bioengineering	3-5
BIOPHYS 242	Methods in Molecular Biophysics	3

BIOPHYS 250	Seminar in Biophysics	1
MED 255	The Responsible Conduct of Research	1
AND, 4 graduate level courses in physical or biological science, with		
	at least 1 course in physical science	
	at least 1 course in literature-based biological science	

1. Training in a major with connections to biophysics such as physics, chemistry, or biology, with a quantitative background equivalent to that of an undergraduate physics or chemistry major at Stanford.
2. Opportunities for teaching are available during the first nine quarters, at the discretion of the advising committee.
3. The student must prepare a dissertation proposal defining the research to be undertaken, including methods of procedure. This proposal should be submitted by Autumn Quarter of the second year, and it must be approved by a committee of at least three members, including the principal research adviser and at least one member from the Biophysics Program. The candidate must defend the dissertation proposal in an oral examination. The dissertation reading committee normally evolves from the dissertation proposal review committee.
4. The student must present a Ph.D. dissertation as the result of independent investigation that expresses a contribution to knowledge in the field of biophysics.
5. The student must pass the University oral exam, taken only after the student has substantially completed the dissertation research. The examination is preceded by a public seminar in which the research is presented by the candidate.

Director: Vijay Pande (Chemistry)

Professors:

- Russ Altman (Genetics, Medical Informatics)
- Steve Block (Applied Physics, Biology)
- Steven Boxer (Chemistry)
- Axel Brunger (Molecular and Cellular Physiology)
- Gilbert Chu (Oncology)
- Steven Chu (Physics, Molecular and Cellular Physiology)
- Mark Davis (Microbiology and Immunology)
- Sebastian Doniach (Physics, Applied Physics)
- James Ferrell (Chemical and Systems Biology)
- Daniel Fisher (Applied Physics)
- Judith Frydman (Biology)
- K. Christopher Garcia (Molecular and Cellular Physiology, Structural Biology)
- Gary Glover (Radiology)
- Philip C. Hanawalt (Biology)
- Daniel Herschlag (Biochemistry)
- Keith O. Hodgson (Chemistry)
- Theodore Jardetzky (Structural Biology)
- Chaitan Khosla (Chemical Engineering, Chemistry)
- Peter S. Kim (Biochemistry)
- Brian Kobilka (Molecular and Cellular Physiology)
- Eric Kool (Chemistry)
- Ron Kopito (Biology)
- Roger D. Kornberg (Structural Biology)
- Craig Levin (Radiology)
- Michael Levitt (Structural Biology)
- Richard Lewis (Molecular and Cellular Physiology)
- Sharon Long (Biology)
- Tobias Meyer (Chemical and Systems Biology)

- W. E. Moerner (Chemistry)
- Vijay Pande (Chemistry)
- Norbert Pelc (Bioengineering, Radiology)
- Joseph D. Puglisi (Structural Biology)
- Stephen Quake (Bioengineering)
- Stephen J. Smith (Molecular and Cellular Physiology)
- Edward I. Solomon (Chemistry)
- James A. Spudich (Biochemistry, Developmental Biology)
- Julie Theriot (Biochemistry)
- Thomas Wandless (Chemical & Systems Biology)
- William I. Weis (Structural Biology, Molecular and Cellular Physiology)
- Richard N. Zare (Chemistry)

Associate Professors:

- Annelise Barron (Bioengineering)
- Zev Bryant (Bioengineering)
- Jennifer Cochran (Bioengineering)
- Ron Dror (Computer Science)
- Miriam Goodman (Molecular and Cellular Physiology)
- Pehr Harbury (Biochemistry)
- KC Huang (Bioengineering)
- Jan Liphardt (Bioengineering)
- Merritt Maduke (Molecular and Cellular Physiology)
- Beth Pruitt (Mechanical Engineering)
- Jianghong Rao (Radiology)
- Mark Schnitzer (Biology, Applied Physics)
- Andrew Spakowitz (Chemical Engineering)

Assistant Professors:

- Onn Brandman (Biochemistry)
- Manish Butte (Pediatrics)
- Lynette Cegelski (Chemistry)
- Ovijit Chaudhuri (Mechanical Engineering)
- Bianxiao Cui (Chemistry)
- Rhiju Das (Biochemistry)
- Adam de la Zerda (Structural Biology)
- Alexander Dunn (Chemical Engineering)
- Liang Feng (Molecular and Cellular Physiology)
- Polly Fordyce (Genetics)
- William Greenleaf (Genetics)
- Jin Billy Li (Genetics)
- Lingyin Li (Biochemistry)
- Manu Prakash (Bioengineering)
- Ingmar Riedel-Kruse (Bioengineering)
- Julia Salzman (Biochemistry)
- Jan Skotheim (Biology)
- Sindy Tang (Mechanical Engineering)
- Mary Teruel (Chemical and Systems Biology)
- Bo Wang (Bioengineering)