

BIOPHYSICS PROGRAM

Chair: William Weis

Professors: Richard W. Aldrich (Molecular and Cellular Physiology), Steve Block (Applied Physics), Steven Boxer (Chemistry), Martin J. Brown (Radiation Oncology), Steven Chu (Applied Physics), Sebastian Doniach (Applied Physics), Philip C. Hanawalt (Biological Sciences), Keith O. Hodgson (Chemistry), Wray H. Huestis (Chemistry), Oleg Jardetzky (Molecular Pharmacology), Eric Kool (Chemistry), Ron Kopito (Biological Sciences), Roger D. Kornberg (Structural Biology), Michael Levitt (Structural Biology), Harden M. McConnell (Chemistry), David B. McKay (Structural Biology), W. E. Moerner (Chemistry), Norbert Pelc (Radiology), Ed Solomon (Chemistry), James A. Spudich (Biochemistry, Developmental Biology), Howard Schulman (Neurobiology)

Associate Professors: Gilbert Chu (Oncology), Amato Giaccia (Radiation Oncology), David Heeger (Psychology), Daniel Herschlag (Biochemistry), Jody Puglisi (Structural Biology), William Weis (Structural Biology), Tobias Meyer (Molecular Pharmacology)

Assistant Professors: Judith Frydman (Biological Sciences), Kenan C. Garcia (Microbiology and Immunology), Peter Jackson (Pathology), Peter Kuhn (SLAC), Vijay Pande (Chemistry), Julie Theriot (Biochemistry)

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.

GRADUATE PROGRAM

For information of the University's basic requirements for the Ph.D. degree, see the "Graduate Degrees" section of this bulletin.

A small number of highly 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 the Ph.D. degree include:

1. Training in physics or chemistry equivalent to that of an undergraduate physics or chemistry major at Stanford.
2. Completion of the following courses (or their equivalents):
 - a) Biophysics 250
 - b) Biochemistry 200, 201
 - c) Chemistry 131, 171, 173, and 175
 - d) Structural Biology 241 and 242
 - e) Additional courses as required for the individually tailored program
3. Proficiency in one or more foreign languages and/or a computer language may be required at the discretion of the major professor.
4. Opportunities for teaching are available during the first nine quarters, at the discretion of the advising committee.
5. The student must prepare a Dissertation Proposal defining the research to be undertaken, including methods of procedure. This proposal should be submitted by Winter Quarter of the third 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 Committee on Biophysics. The candidate must defend the dissertation proposal in an oral examination. The Dissertation Reading Committee normally evolves from the Dissertation Proposal Review Committee.
6. The student must present a Ph.D. dissertation as the result of independent investigation and expressing a contribution to knowledge in the field of biophysics.
7. The student must pass the University oral examination, taken only after the student has substantially completed the research. The examination is preceded by a public seminar in which the research is presented by the candidate.

COURSES

205. DNA Repair and Mutagenesis—(Enroll in Biological Sciences 205.)

3 units, Spr (Hanawalt)

210. Advanced Topics in Membrane Biochemistry—(Enroll in Biochemistry 210.)

4 units (Pfeffer) not given 2000-01

210A. Principles of Cell Physiology—(Enroll in Molecular and Cellular Physiology 210.)

4 units, Spr (Aldrich, Lewis)

211. Biophysics of Sensory Transduction—(Enroll in Biological Sciences 211.)

4 units, Spr (Block)

214. Physical and Chemical Principles of Biochemistry—(Enroll in Biochemistry 214.)

4 units (Herschlag) not given 2000-01

225. Molecular Motor Proteins and the Cytoskeleton—(Enroll in Biochemistry 225, Developmental Biology 225.)

3 units (Fuller, Spudich) not given 2000-01

228. Protein and Nucleic Acid Structure, Dynamics, and Engineering—(Enroll in Structural Biology 228.)

3 units, Win (Levitt)

237. Introduction to Biotechnology—(Enroll in Biochemistry 237, Biological Sciences 237, Chemical Engineering 450, Civil and Environmental Engineering 237, Developmental Biology 237, Structural Biology 237.)

3 units, Spr (Robertson, Swartz)

241. Biological Macromolecules—(Enroll in Structural Biology 241.)

3 units, Aut (Aldrich, Ferrell, Herschlag, Lewis, Puglisi, Weis)

242. Methods in Molecular Biophysics—(Enroll in Structural Biology 242.)

3 units, Win (Harbry, McKay, Puglisi, Weis)

250. Seminar in Biophysics—All graduate students in Biophysics must participate. Presentation of current research projects and results by all faculty in the Biophysics Program.

1 unit, Aut, Win (Staff)

255. Responsible Conduct of Research—All graduate students must complete.

Win

289. Biophysical Chemistry—(Enroll in Chemistry 289.)

3 units (Staff) not given 2000-01

291. Biophysical Chemistry—(Enroll in Chemistry 291.)

3 units (Staff) not given 2000-01

297. Bio-Inorganic Chemistry—(Enroll in Chemistry 297.)

3 units (Solomon) alternate years, given 2001-02

300. Research

(Staff)

Other biophysics courses in related departments:

Chemistry 251, Neurobiology 216

Other recommended courses:

Biological Sciences 230; Biochemistry 200; Chemistry 271, 273, 275; Physics 170, 171, 230, 231, Structural Biology 211