PROGRAM

(1) Undergraduate Preparation for Admission

General Requirements:
Undergraduate degree (B.S. or B.A.) in a biological or physical science.

Special Requirements:
One year of calculus.
One course in statistics.
One year of physics.
One year of general chemistry, including quantitative analysis.
Physical chemistry.
One year of organic chemistry.
One course in biochemistry.
One course in genetics.
Introductory biology courses, including general biology, developmental biology, and cell biology.

(2) Program of Study

a) Specific Fields of Emphasis and Plans
The program will offer the doctoral degree (Ph.D.) in biophysics.

b) Biophysics Laboratory
This is a two-quarter sequence involving laboratory rotations. All students will be expected to participate in four 5-week laboratory assignments designed to acquaint them with a variety of current research techniques. Estimated total units: 12.

c) Lecture Courses (15 units minimum)

i. Students will first make up deficiencies in the list of courses required for admission to the program.

ii. All students will take a lecture course (Biophysics 200) examining the theory behind current laboratory techniques in biophysics. Lectures on specific techniques will be given by faculty members who use those methods in their own research.

iii. The program assumes that students have one of three general backgrounds: physics, chemistry or biological science. Students will be expected to complete the complementary part of their education as outlined below. The completion of these courses will normally take from one to two years, depending on the student's ability. During this time, students are expected to select a research adviser and identify a thesis topic. It is expected that students should complete their thesis research and all degree requirements within 5 years from the time of entrance into the program.

COMPLEMENTARY COURSES

Physics background:
Biological Sciences 102 (Structure and function of biomolecules)
Chemistry 128 ABC (Organic chemistry)
Biological Sciences 101 (Genes and gene expression) or
Neurobiology, Physiology and Behavior 101 (Systemic physiology) or
Biological Sciences 104 (Regulation of cell function)

Chemistry background:
Biological Sciences 102 (Structure and function of biomolecules)
Biological Sciences 101 (Genes and gene expression) or
Physics 110 ABC (Electricity and magnetism)
Neurobiology, Physiology and Behavior 101 (Systemic physiology) or
Biological Sciences 104 (Regulation of cell function)

Biological Sciences background:
Chemistry 110 ABC (Physical chemistry)
Math 22B (Differential equations)
Math 22A (Linear algebra) or 22C (Vector Analysis)
Physics 110 ABC (Electricity and magnetism)

CORE COURSES
Molecular and Cellular Biology 221A (Physical and chemical biochemistry)
Chemistry 108 (Macromolecules)
Statistics 102 (Probability)
Two additional courses in the area of specialization

iv. In consultation with a three-member advisory committee chaired by the student's research adviser, each student will design a degree program that will implement the student's graduate career objectives and meet the group's standards and aims. Any requirements set by the committee are considered by the graduate adviser to be official requirements for the degree.

d) TA Requirement
One quarter of teaching experience is required in either a physical or biological sciences course.

(3) Qualifying Examination
A qualifying examination will be given during or before the seventh quarter in residence according to the regulations of the office of Graduate Studies.
PROGRAM

(1) Undergraduate Preparation for Admission
General Requirements:
Undergraduate degree (B.S. or B.A.) in a biological or physical science.
Special Requirements:
One year of calculus.
One course in statistics.
One year of physics.
One year of general chemistry, including quantitative analysis.
Physical chemistry.
One year of organic chemistry.
One course in biochemistry.
One course in genetics.
Introductory biology courses, including general biology, developmental biology, and cell biology.

(2) Program of Study
a) Specific Fields of Emphasis and Plans
The program will offer the doctoral degree (Ph.D.) in biophysics.

b) Biophysics Laboratory
This is a two-quarter sequence involving laboratory rotations. All students will be expected to participate in four 5-week laboratory assignments designed to acquaint them with a variety of current research techniques. Estimated total units: 12.

c) Lecture Courses (15 units minimum)
i. Students will first make up deficiencies in the list of courses required for admission to the program.
ii. All students will take a lecture course (Biophysics 200) examining the theory behind current laboratory techniques in biophysics. Lectures on specific techniques will be given by faculty members who use those methods in their own research.
iii. The program assumes that students have one of three general backgrounds: physics, chemistry or biological science. Students will be expected to complete the complementary part of their education as outlined below. The completion of these courses will normally take from one to two years, depending on the student’s ability. During this time, students are expected to select a research adviser and identify a thesis topic. It is expected that students should complete their thesis research and all degree requirements within 5 years from the time of entrance into the program.

COMPLEMENTARY COURSES

Physics background:
Biological Sciences 102 (Structure and function of biomolecules)
Chemistry 128 ABC (Organic chemistry)
Biological Sciences 101 (Genes and gene expression) or
Neurobiology, Physiology and Behavior 101 (Systemic physiology) or
Biological Sciences 104 (Regulation of cell function)

Chemistry background:
Biological Sciences 102 (Structure and function of biomolecules)
Biological Sciences 101 (Genes and gene expression) or
Physics 110 ABC (Electricity and magnetism)
Neurobiology, Physiology and Behavior 101 (Systemic physiology) or
Biological Sciences 104 (Regulation of cell function)

Biological Sciences background:
Chemistry 110 ABC (Physical chemistry)
Math 22B (Differential equations)
Math 22A (Linear algebra) or 22C (Vector Analysis)
Physics 110 ABC (Electricity and magnetism)

CORE COURSES
Molecular and Cellular Biology 221A (Physical and chemical biochemistry)
Chemistry 108 (Macromolecules)
Statistics 102 (Probability)
Two additional courses in the area of specialization

iv. In consultation with a three-member advisory committee chaired by the student’s research adviser, each student will design a degree program that will implement the student’s graduate career objectives and meet the group’s standards and aims. Any requirements set by the committee are considered by the graduate adviser to be official requirements for the degree.

d) TA Requirement
One quarter of teaching experience is required in either a physical or biological sciences course.

(3) Qualifying Examination
A qualifying examination will be given during or before the seventh quarter in residence according to the regulations of the office of Graduate Studies.