Biological Physics Track

Overview

The Biological Physics Track is aimed at giving students a thorough grounding in physics, biology and chemistry, preparing them for medical school, graduate school in medical physics, biophysics or bioengineering, or technical careers that combine physical and biological sciences. This is an exciting growth area where students can pursue interdisciplinary research. This degree option has the most required courses of the four, but half of these are available at community college. The Biological Physics Track is thus appropriate for a student who explored biology, chemistry and physics before deciding on a major path, or who wishes to double major in physics and either biology, biochemistry, or chemistry.

Requirements (109-113 credits)

NOTE: A single course may meet at most ONE physics-specific degree requirement.

Core Requirements (55-56 cr). (See here)

Core Physics (10-11 cr)

Phys 324 (4) Quantum Mechanics II
Phys 328 (3) Statistical Mechanics
ONE course selected from:
   Phys 226 (3) Particles and Symmetries
   Phys 323 (4) Electromagnetism III
   Phys 325 (4) Quantum Mechanics III
   Phys 329 (3) Classical Mechanics

Biological Physics (3 cr)

Phys 429 (3) Biological Physics

Advanced Math (4 cr)

Phys 228 (4) Mathematical Physics II

Introductory Biology and Chemistry (22-25 cr)

Biol 180 (5) Evolution and Ecology
Biol 200 (5) Cellular and Developmental Biology
†Chem 142 (5) + 152 (5) + 162 (5): General Chemistry OR Chem *143 (6) + *153 (6): Accelerated General Chemistry

Advanced Biology and Chemistry (6-10 cr)

TWO courses selected from**:
   Chem 223 OR 237 OR *335 (4) Organic Chemistry I
   Chem 224 OR 238 OR *336 (4) Organic Chemistry II
   Chem 428 Bioinstrumental Analysis
   Chem 452 or 456 (3) Physical Chemistry (thermodynamics)
Chem 453 (3) Physical Chemistry for biochemists (transport, kinetics, stat mech)
Chem *454 (3) Biomolecular Spectroscopy
Chem *455 (3) Physical Chemistry (quantum chemistry)
Biol 220 (5) Physiology
Biol 340 (5) Genetics and Molecular Ecology
Biol 350 (3) Physiology
Biol 355 (3) Molecular Cell Biology
Biol 401 (3) Advanced
Biol 427 (5) Biomechanics
Biol *461 (3) Neurobiology
Biol 467 (3) Comparative physiology
BioChem 405 (3) or 440 (4) Biochemistry

NOTE: Chem 457 is currently coded into DARS as meeting this requirement, but it has a 70% overlap with PHYS 328. Most students should not take both of these courses. Chem 457 plus an additional upper-division physics course may substitute for the PHYS 328 requirement with permission from the UFA.

Capstone
3 credits of biophysics-related research from:
PHYS 499, BIOC 499, BIOL 499, CHEM 499, GENOM 499, MICROM 499, N BIO 499, P BIO 499, or BIOEN 499

Students receiving credit for physics-related research or independent project work in another department may petition to have it meet the capstone requirement by writing a paper describing how they applied biophysics to their independent project. Please see the UFA for details and pre-approval.

NOTES
† . Students who complete Chem 145 instead of one of these sequences should see the UFA to determine how much additional chemistry they require.
* . Not currently coded into DARS. Please see the UFA (Prof. Olmstead) to allow this course to meet this requirement.
** . Other courses may be accepted by petition to the UFA (Prof. Olmstead).

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