Biological Physics

Biological Physics is a discipline that investigates the physical problems presented by biological systems, applying physics principles and techniques to gain new insights into the processes of life. This interdisciplinary major, administered by the Physics Department, is intended to prepare students to contribute to or pursue graduate study in areas of the life sciences and health professions that are increasingly technical, including cell biology, neuroscience, and medical research.

Major Requirements

BIO 121 Foundations: Cell & Molecular Biology

BIO 131 Foundations: Organismal Biology

CHM 160 Organic Chemistry: Structure & Fundamentals

CHM 170 Organic Chemistry: Reactions & Synthesis

BCH 333 Biochemistry

PHY 101/107 General Physics I

PHY 108 General Physics II

PHY 209 Modern Physics

PHY 209L Modern Physics Lab

PHY 250 Mathematical Methods

PHY 259L Computational Physics Lab

PHY 327 Biological Physics

PHY 441/442 Senior Research

MTH 151 Calculus I

MTH 152 Calculus II

one of:

PHY 317 Thermal Physics

CHM 360 Thermodynamics and Kinetics

one of:

PHY 313 Electricity and Magnetism

PHY 322 Electronics (with laboratory)

PHY 331 Quantum Mechanics

and three electives from the following:

BIO 201 Genetics

BIO 212 Cell Biology

BIO 311 Molecular Biology

BIO 314 Immunology

NSC 300 Experimental Neuroscience

A full list of courses and descriptions can be found online in the College catalog.

WASHINGTON & JEFFERSON COLLEGE
1781

Program Website

washjeff.edu/biological-physics

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Beyond the Classroom

Students have many opportunities for research, internships, conferences, and networking beyond the classroom that give them an advantage to prepare for life after W&J.

Research and Internships

- The intense, interdisciplinary laboratory curriculum is designed to prepare students to participate in meaningful research early in their studies.
- As part of the curriculum, students complete a two-semester independent research project in which they work with a faculty member to investigate a topic of relevant to their scientific or career interests.
- Transferable skills propel students to take advantage of international research internships in cutting-edge scientific and engineering fields.

Careers

- Careers in medicine, including veterinary medicine (DVM) and combined M.D./Ph.D. programs
- Research at the intersections of biology, chemistry, physics, medicine, and engineering

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