This major provides a solid foundation in both the biological sciences and the fundamental concepts of classical and quantum physics through a variety of tools that include abstract thought, experimentation and observation, data analysis, and mathematical modeling. This foundation prepares students for further study in graduate and professional schools and for careers as scientists or engineers who will participate in the creation of the science and technology of the future.

Opportunities for Students

- **Society of Physics Students:** SPS is a close-knit community of those interested in physics. Meetings cover an array of topics including lectures given by USC’s 1994 Nobel Prize Winner, Dr. George Olah, discussions about NASA’s Jet Propulsion Laboratory, and information on Graduate School Admissions dos and don’ts.

- **Directed Research:** By enrolling in an upper-level directed research course, students can delve further into their major by working with a mentor faculty member.

- **Study Abroad:** Learn about trends in research and discovery around the world by spending a semester or year in Europe, Africa, Australia, or South America.

- **Supplemental Instruction:** This academic support program provides regularly scheduled, peer-led study sessions for common Biology, Chemistry, Math, and Physics courses.

Notable Courses

- **MATH 245: Mathematics of Physics and Engineering I** — First-order differential equations; second-order linear differential equations; determinants and matrices; systems of linear differential equations; Laplace transforms.

- **PHYS 304: Mechanics** — Dynamics of particles, kinematics of rotations, rigid body motion, Lagrangian and Hamiltonian formalism, theory of small vibrations.

- **PHYS 408: Electricity and Magnetism** — Electrostatics; thermal, chemical, magnetic effects of steady currents; DC circuits.

- **PHYS 444: Physical Biology** — From Molecules to Cells — Length, time, and energy scales of life; statistical mechanics of biomolecules and cellular processes; physics of cell shape; biological fluid dynamics; electron transfer and metabolism.
Bachelor of Science (BS) Requirements

Lower Division Requirements*
- BISC 120: General Biology — Organismal Biology and Evolution
- BISC 220: General Biology — Cell Biology and Physiology
- CHEM 105: General Chemistry A & B
- MATH 125: Calculus I
- MATH 126: Calculus II
- MATH 226: Calculus III
- MATH 245: Mathematics of Physics and Engineering I
- PHYS 161: Advanced Principles of Physics I  
or  PHYS 151: Fundamentals of Physics I — Mechanics and Thermodynamics
- PHYS 162: Advanced Principles of Physics II  
or  PHYS 152: Fundamentals of Physics II — Electricity and Magnetism
- PHYS 163: Advanced Principles of Physics III  
or  PHYS 153: Fundamentals of Physics III — Optics and Modern Physics
- PHYS 190: Physics Discovery Series

Upper Division Requirements*
- BISC 320: Molecular Biology
- BISC 330: Biochemistry
- CHEM 322: Organic Chemistry A & B
- MATH 445: Mathematics of Physics and Engineering II
- PHYS 304: Mechanics
- PHYS 316: Thermodynamics and Statistical Physics
- PHYS 408: Electricity and Magnetism
- PHYS 438: Introduction to Quantum Mechanics and Its Applications
- PHYS 444: Physical Biology — From Molecules to Cells

*This information is offered as a partial overview only. For additional information, including all major requirements, please consult the USC Catalogue or http://dornsife.usc.edu/physics/biophysics/. Updated as of August 2015.

**This does not represent all options in this category. For a complete list, please consult the USC Catalogue.