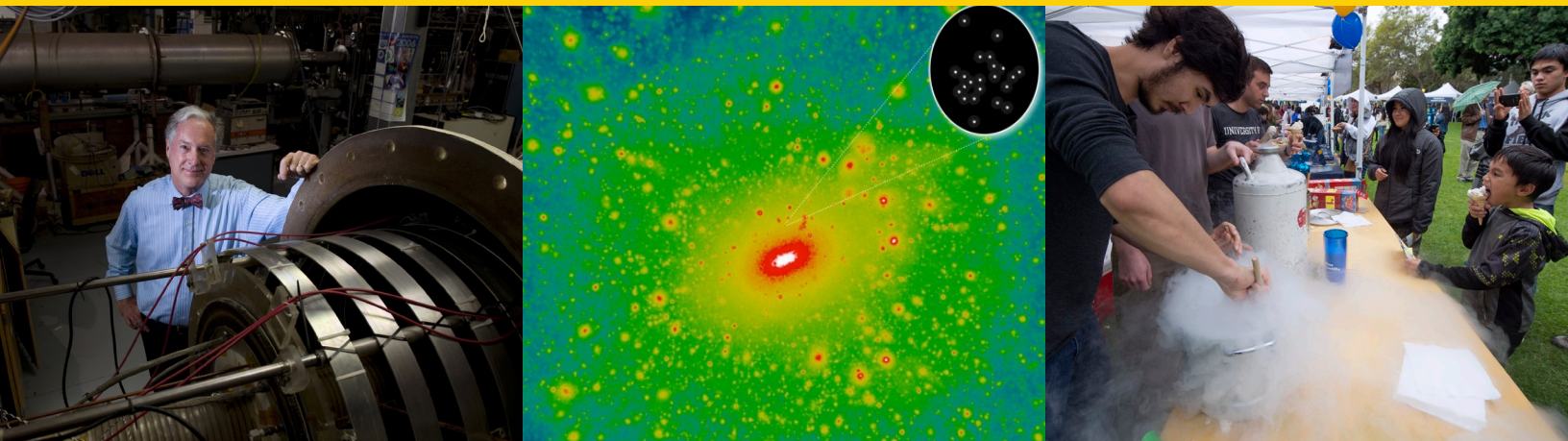


# UCI School of Physical Sciences

Teaching • Research • Service

## DEPARTMENT OF PHYSICS & ASTRONOMY



### SCHOOL OF PHYSICAL SCIENCES

Established in 1965, the UCI School of Physical Sciences rose to the top echelon of academia in a remarkably short time, and in 1995 became the first public university with two faculty to be awarded the Nobel Prize in two different fields. We offer top-rated educational and research opportunities for tomorrow's scientists, teachers, and technical professionals in the departments of Chemistry, Earth System Science, Mathematics, and Physics & Astronomy. Our world-renowned faculty members and research scientists teach and perform research with undergraduate and graduate students and postdoctoral fellows to explore the ever-advancing frontiers of knowledge.

### DEPARTMENT OF PHYSICS & ASTRONOMY

Physics lies at the forefront of our understanding of nature. It includes the study of the universe on the largest scales- astronomy and cosmology, and on the smallest- the physics of quarks and leptons. UCI Physicists study exciting topics like quantum mechanics, gravitation, the big bang, black holes, magnetism, and superconductivity. In addition, physics provides the background for high-technology; lasers, nuclear power, semiconductors, and medical imaging, all have their roots in physics.

### B.S. IN PHYSICS & APPLIED PHYSICS

Physics majors have the opportunity to work closely with faculty throughout their undergraduate years in large introductory courses; small lectures and laboratories are reserved for Physics majors only. These special sections promote closer student-faculty interaction, and allow the small community of Physics students to work together as they explore this fascinating but demanding field. The curriculum is flexible enough to accommodate a wide variety of interests, including astrophysics, computational physics, philosophy of physics, business, law, and teaching. Students are guided through the program by faculty advisors who are specialists at working with students in different stages of their academic careers.

The Department offers a B.S. degree in **Physics**. In addition to the core degree requirements, Physics majors complete either the standard track, or one of the formal concentrations or specializations.

#### **SPECIALIZATION IN ASTROPHYSICS**

Designed for students interested in graduate studies in Astronomy/Astrophysics, research work in Aeronautics/Astrophysics related industries, or government research laboratories.

#### **CONCENTRATION IN COMPUTATIONAL PHYSICS**

Designed for students interested in graduate studies in Computational Physics, or students seeking employment in application programming.

#### **CONCENTRATION IN THE PHILOSOPHY OF PHYSICS**

Designed for students interested in graduate studies in Philosophy or Law, or other professions that employ both quantitative and verbal reasoning.

#### **CONCENTRATION IN PHYSICS EDUCATION**

Designed for students interested in education. Curriculum focuses on courses that are useful for prospective Physics teachers.

#### **CONCENTRATION IN PHYSICS EDUCATION/ SECONDARY TEACHING CERTIFICATION**

Allows for students in Physics to earn a bachelor's degree and complete the required coursework and field experience for the California Preliminary Single Subject Teaching Credential at the same time. This is a 4-year program called the Cal Teach Program.

The Department offers a B.S. degree in **Applied Physics**. In addition to the core degree requirements, Applied Physics majors complete either the standard track, or one of the formal concentrations.

#### **CONCENTRATION IN ENGINEERING PHYSICS**

Designed for students anticipating a career in industrial or technological research, or future graduate studies.

#### **CONCENTRATION IN BIOMEDICAL PHYSICS**

Designed for students anticipating a career in physics applied to biology or medicine, or students interested in medical school.

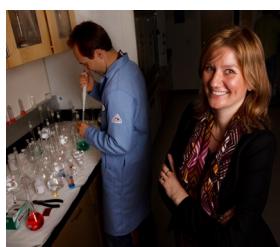
## RESEARCH OPPORTUNITIES

One of the most valuable educational experiences offered by the Department of Physics & Astronomy is the opportunity to participate in research projects with faculty members. Usually the projects involve laboratory or computational work in particle physics, plasma physics, condensed matter physics, biophysics, or astronomy. Because the department is well funded and active in research, and because the student-to-faculty ratio is low, all qualified students who seek undergraduate research obtain a suitable project.

UCI Scientists are playing a key role in the Large Hadron Collider, the world's most powerful particle accelerator. Built in Switzerland, it seeks to recreate conditions just a fraction of a second after the Big Bang. It will do this by smashing subatomic particles together at very high speeds around a 17-mile underground ring. Scientists hope the LHC will explain basic forces that have shaped our universe.

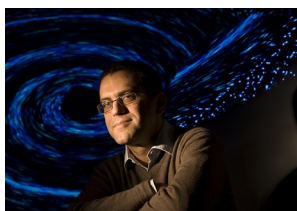
Other major areas of research include:

- Astronomy/Astrophysics
- Cosmology
- Biological Physics
- Particle Physics
- Condensed Matter
- Gravitational Physics
- Medical Physics
- Plasma Physics



## UCI CENTER FOR COSMOLOGY

The Center for Cosmology is involved in research aiming to unlock the structure and evolution of the Universe. Modern cosmology originated with Einstein's relativistic theory of gravitation and the discovery of cosmic expansion by Hubble in the 1920s. It has since led to the big bang cosmic model and, in recent years, advances in the field led scientists to new concepts such as dark matter and dark energy.



## HONORS PROGRAM IN PHYSICS

The Honors Program in Physics provides an opportunity for selected students majoring in Physics or Applied Physics to pursue advanced work in one of the research areas of the Department. Admission to the program is based on an application submitted in junior year. Applicants must have a grade point average of at least a 3.4 overall, and a 3.5 grade point average in their Physics courses. In selecting students for the program, the Department considers evidence of ability and interest in research. Students complete a year-long series of honors level courses and seminars, and submit a formal thesis late in the spring quarter. If all requirements are completed and the student's work and final GPA satisfies the program restrictions, the student will graduate with Honors in Physics, and this distinction is noted on their transcript.

## PROGRAM OF STUDY

For all Physics & Applied Physics majors, assistance in planning a program of study is available from the Physics Department Undergraduate Advisor, the Physics Faculty Advisor, as well as from the Academic Counselors in the School of Physical Sciences. The following is a sample plan of courses for both majors.

1ST YEAR	Classical Physics with Lab, Mathematics, Writing, General Education
2ND YEAR	Modern Physics, Experimental Physics, Mathematical Physics, Mathematics, General Education
3RD YEAR	Classical Mechanics, Quantum Physics, Physics Electives, General Education **
4TH YEAR	Physics Research, Physics Electives, General Education **

*\*\*Applied Physics curriculum includes Physics Lab and Lab Electives. More detailed plans can be found in the UCI Catalogue.*

## SIGMA PI SIGMA

Sigma Pi Sigma is a national physics honorary society into which a few select graduating seniors are invited. It was founded in 1921 and exists to honor outstanding scholarship in physics; to encourage interest in physics among students at all levels; to promote an attitude of service of its members towards their fellow students, colleagues, and the public; to provide a fellowship of persons who have excelled in physics.

## SOCIETY OF PHYSICS STUDENTS

The Society of Physics Students (SPS) at UCI, is an undergraduate student organization set up for the purpose of promoting and assisting students, providing career guidance to Physics & Applied Physics students, and presenting research opportunities in the Physics Department. SPS also conducts demonstrations, plans social events with fellow Physics students, provides a place for members to study, and offers access to instructors and researchers for research opportunities.

## UNDERGRADUATE MENTORING PROGRAM

The Physical Sciences Undergraduate Mentoring Program (PSUM) is an initiative by the School of Physical Sciences to help undergraduate students succeed both professionally and academically. Students will have the opportunity to meet and converse with professionals from various career paths. The goal is to expose students to career and networking opportunities. Mentors coach students in career and academic decisions.



Photos Courtesy UCI Communications

## ADDITIONAL INFORMATION

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