The many opportunities outside the classroom, including participating in a research lab, provided me with hands-on experience to prepare me for a future career.

—Ting-Shiuan Chang, Pharmaceutical Chemistry, '14

MPS-wide Program

Mentorships for Undergraduate research Participants in the Physical & Mathematical Sciences (MUrPPS)

Students with interests in chemistry, computer science, earth and planetary sciences, mathematics, physics and statistics can participate in the program, which provides the opportunity to work one-on-one with UC Davis faculty. This research opportunity begins in your freshman year at UC Davis and continues throughout your undergraduate years, subject to the availability of future funding.

success.ucdavis.edu/programs/specialty/murpps.html

Mathematics and Science Teaching Program (MaST)

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mast.ucdavis.edu/

Bodega Marine Laboratory

Through innovative research programs and teaching initiatives, the Bodega Marine Laboratory will lead the way to the multi-disciplinary scientific understanding required to solve complex environmental problems on the marine and terrestrial sides of the tideline in northern California. UC Davis students may spend a quarter or summer at BML taking marine science courses and getting hands-on experience in a prominent research facility.

bml.ucdavis.edu/

Notable Faculty from the division:

• Norbert Wiener Prize in Applied Mathematics: Craig Tracy
• Benjamin Franklin Medal of Earth Sciences: Alexandra Navrotsky
• National Academy of Science members: John Dewey, Peter Hall, Alexandra Navrotsky, Donald Turcotte and J. Anthony Tyson
• American Academy of Arts and Sciences members: Louise Kellogg, Craig Tracy and J. Anthony Tyson
• Fellows of the Royal Society: Peter Hall and Philip Power
• MacArthur "Genius" Award: Geerat Vermeij
• American Philosophical Society: Alexandra Navrotsky and J. Anthony Tyson
• Jefferson Science Fellow: Ken Verosub
• Presidential Award in Science, Mathematics, and Engineering Mentoring: Susan Kauzlarich

Minor in MPS

Chemistry
Computer Science
Environmental Geology
Geology
• General Geology
• Engineering Geology
• Geochemistry
• Paleobiology
Geophysics
Mathematics
Oceanography
Physics
Statistics

"geology is an incredibly rewarding and interesting major that will change the way you see the natural world for the rest of your life."

—Sasha Leidman, Earth and Planetary Sciences, '14
MAJORS

If you are interested in mathematical or physical sciences, there are many majors available to you, along with a variety of career options after you graduate.

CHEMISTRY
With award-winning faculty in research and teaching, diverse classes, advanced facilities, state-of-the-art instrumentation, and interdisciplinary research, faculty and student researchers study chemistry areas including biofuels, nucleic acids, glycoscience, metabolic engineering, imaging, metalloenzymes, reaction kinetics, spectroscopy, asymmetric catalysis, natural product synthesis, nanomaterials, solid state materials for energy, medicinal chemistry, protein structure, and vaccine design. The department features a classic B.S. degree, as well as programs that focus on chemical physics, environmental chemistry, pharmaceutical chemistry and forensic chemistry, and an innovative integrated B.S./M.S. in pharmaceutical chemistry.

Majors
Chemistry (A.B., B.S.)
• Environmental Chemistry
• Forensic Chemistry
Chemical Physics (B.S.)
Pharmaceutical Chemistry (B.S.)

Career options
• Forensic analysis
• Pharmaceutical work
• Water quality control
• University health and safety
• Research and development
• Postgraduate work
• Environmental and regulatory agencies
• Chemical, engineering and energy
• Materials development
• National laboratories

chemistry.ucdavis.edu

EARTH AND PLANETARY SCIENCES
Geologists study earth’s 4.6 billion year history and explore the solar system to understand the evolution of our planet and predict mankind’s impact on the future. The fundamental principles of geology, mathematics, physics, chemistry and biology are all applied in studies of Earth. With its research labs, field trips, and field camps, the geology program provides students with a unique opportunity to work closely with internationally recognized faculty on issues ranging from natural hazards to the evolution of life to planetary processes. Earth and Planetary Sciences also offers a new interdisciplinary major called Marine and Coastal Science, which explores ocean processes and marine policy. In addition, the faculty is heavily invested in the education of future science teachers, at both the K-12 and higher education levels.

Majors
Geology (A.B., B.S.)
• General Geology
• Geochemistry/Petrology
• Quantitative/Geophysics
Marine and Coastal Science (B.S.) NEW!
• Coastal Environmental Processes
• Marine Ecology and Organisms Biology
• Marine Environmental Chemistry
• Oceans and the Earth System
Natural Sciences (B.S.)
with the following concentrations:
• Chemistry
• Earth Science
• Life Science
• Physics

Career options
• Science education
• Climate change
• Oceanography and marine biology
• Space agencies
• National laboratories
• Policy positions in government and private sector
• Government regulatory agencies
• Environmental Law
• Environmental and geotechnical consulting firms
• Petroleum industry
• Postgraduate study

geology.ucdavis.edu

MATHMATICS
Degrees in mathematics, applied mathematics, analytics and operations research, and scientific computing are offered by highly ranked faculty whose research spans algebra, analysis, geometry, probability, mathematical physics, mathematical biology and topology. Mathematics is playing an increasingly central role in all aspects of human and scientific life. (E.g. did you know matrix algebra is at the heart of Google’s search engine?) The diverse majors within this department are designed to prepare graduates with the strong analytical and problem solving skills for a variety of careers and postgraduate programs.

Majors
Applied Mathematics (B.S.)
Mathematical Analytics & Operations Research (B.S.) NEW!
Mathematical and Scientific Computation (B.S.)
• Computational and Mathematical Biology
• Computational and Mathematics
Mathematics (A.B., B.S.)
• General Mathematics
• Mathematics for Secondary Teaching

Career options
• Computing
• Actuarial science and accounting
• Business management
• Medicine and life sciences
• Engineering
• Operations research
• Systems analysis
• Financial services
• Education
• Postgraduate study

math.ucdavis.edu

“My favorite part of being a math major at UC Davis is the community! I’ve made many lasting friendships and feel a strong sense of support from both the department and my peers.”
—Hannah Polterock, Mathematics, ’16

US News and World Report Rankings:
Chemistry: 35 (2014)
Computer Science: 39 (2011)
Mathematics: 34 (2014)
Physics: 29 (2014)
(See back for minors and MPS-wide programs!)

PHYSICS
The physics department’s internationally renowned faculty have vibrant research programs in high energy physics, condensed matter physics and cosmology as well as interdisciplinary areas such as biophysics and complexity science. This research yields exhilarating discoveries from the most elementary particles to exciting new materials on Earth and at the edge of the observable universe. UC Davis physics students learn creative technical problem-solving skills that open up exciting opportunities in basic research, industry and education.

Majors
Applied Physics (B.S.)
- Atmospheric Physics
- Chemical Physics
- Computational Physics
- Geophysics
- Materials Science
- Physical Electronics
- Physical Oceanography
Physics (A.B., B.S.)
- Astrophysics

Career options
- Scientific computing
- Physics research
- Education
- Energy, biotechnology, aerospace, chemical and environmental industries
- Materials science
- Medical imaging
- Postgraduate study in astrophysics, astronomy, biophysics, computer science, condensed matter physics, and materials science
- Management and administration in industrial laboratories and government agencies
- Semiconductor industry

physics.ucdavis.edu

STATISTICS
This department is home to internationally esteemed researchers who work on and train students in the analysis of large and complex data, statistical methodology, algorithms and theory. Faculty study computing, time series, random fields and functional data analysis; random effects and longitudinal data; high-dimensional data and dimension reduction; geometric data analysis; and graphical models. Applications and collaborations focus on astrostatistics, genomics, brain imaging, medicine and epidemiology, biology and behavior, social sciences and finance.

Majors
Statistics (A.B., B.S.)
- General Statistics
- Applied Statistics
- Computational Statistics

Career options
- Data and policy analysis in government
- Financial management
- Insurance and health care industry
- Actuarial work
- Biological research
- Education
- Postgraduate study in statistics, economics, medicine and others

stat.ucdavis.edu

“Statistics challenges me to think critically in order to analyze unique and exciting real world problems.”
—Owen Warner, Statistics, ’14

COMPUTER SCIENCE
This major is designed to prepare students for careers involving the design of computer systems and their application to science, industry and management. Students taking this major receive solid grounding in fundamentals of computer languages, operating systems, and the formal mathematical tools required to use the computer in solving complex tasks. Emphasis in this major is on software, although introductory architecture is included. The computer science program prepares students for work in industry or postgraduate study.

Majors
Computer Science (B.S.)

Career options
- Programming
- System administration
- Computer security
- Software development
- Computer marketing
- Postgraduate work

cs.ucdavis.edu

Notable Alumna from the Division
NASA Astronaut Tracy Caldwell Dyson received her Ph.D. in Physical Chemistry from UC Davis in 1997. Caldwell Dyson taught general chemistry laboratory as a graduate student and began her dissertation work on investigating molecular level surface reactivity and kinetics. She has completed three spacewalks and lived on the International Space Station for six months.

physics.ucdavis.edu
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