



UNIVERSITY OF MINNESOTA

Be part of something great—the University of Minnesota

PHYSICAL SCIENCES

Prepare for your future at one of the nation's top research universities! The University of Minnesota's world-renowned programs offer great academics, great opportunities, and a great location to students interested in the physical sciences.

Great Academics



Physical science students discover the workings of the world around us, from the very big (like galaxies) to the very small (like neutrinos). If you want to expand your horizons and participate in cutting-edge research, the University of Minnesota's College of Food, Agricultural and Natural Resource Sciences (CFANS), College of Liberal Arts (CLA) and Institute of Technology (IT) will make your dreams come true. Consider these exciting degree programs:

- Astronomy (CLA)
- Astrophysics (IT)
- Chemistry (IT)
- Chemistry (CLA)
- Environmental Science (CFANS)
- Geology (IT)
- Geology (CLA)
- Geophysics (IT)
- Physics (IT)
- Physics (CLA)

OUT OF THE ORDINARY EXPERIMENTS

Lindsay Werkmeister has joined Assistant Professor Christy Haynes's lab this semester as a UROP (Undergraduate Research Opportunities Program) student. She is involved in Haynes's research on the chemistry of nanoparticles, particularly ones between 20 and 200 nanometers in size (a nanometer is a billionth of a meter) and containing atoms of both gold and silver. Solutions of the nanoparticles come in different colors, and on her first day in the lab Werkmeister created the first purple batch.

"We were trying to get the whole spectrum from red to blue, and this was a big step," says Werkmeister. "If we succeed, the nanoparticles could be used as dyes—for example, in food coloring."

If the nanoparticles are to be used in the human body, their toxicity must be tested, and Haynes is already planning a preliminary round of tests using cultures of immune cells from mice. The nanoparticles may also find use in sensor devices by turning color as factors such as acidity or salt in their environment change.

Besides nanoscience, Haynes focuses on neurochemistry; specifically, how the messenger molecules of the nervous system—the neurotransmitters—are transported and released by neurons. Electricity on a very tiny scale plays a big role in her work, and she once brought some of her electrochemical data to the general chemistry class to show them what research in progress looks like. Haynes sees the connection to working researchers as a big plus for students at a place like the University, a sentiment Werkmeister echoes.

"I love it here," she says of Haynes's lab. "I have a lot more free rein than I thought I'd have. In other [course-related] labs, everything is laid out for you. It's really exciting to be doing real research."

CAREER AND INTERSHIP OPPORTUNITIES

Wondering what to do with a major in the physical sciences? Whether you aspire to space travel, field study, or anything else, your distinguished degree will open doors into the exciting world of physical sciences. Many of our physical science students seek careers such as:

- Astronomer
- Biochemist
- Crystallographer
- Environmental Scientist
- Hydrologist
- Chemist
- Geologist
- Physicist
- Process Engineer



- Professor
- Quality Control Engineer
- Research Physicist
- Soil Scientist
- Toxicologist
- Water Resources Manager

Internships or co-op programs arranged through the University of Minnesota allow you to experiment with different career paths and gain valuable experiences prior to graduation. CLA and IT each have career services that will help you find hands-on experience before and after graduation.

Great Opportunities

Study Abroad

To prepare you for life in a global society, the U of M actively encourages studying abroad. Working or learning in a foreign country will build your skills, confidence, and cultural awareness as you enter a diverse working world. Imagine studying the geology of Iceland or rocketry in Russia. The Learning Abroad Center offers more than 300 programs in 67 countries, from Nepal or Tanzania to Australia or Mexico.

Freshman Seminars

Designed to enhance your first-year experience, Freshman Seminars are an incredible introduction to academic life. You'll learn from some of the most distinguished faculty at the University of Minnesota, while getting to know other first-year students who share your interests. Recent topics offered by CLA or IT include *E. T. Call Home: The Search for Extraterrestrial Intelligence*; *Cosmic Catastrophes*; *Geology of Minnesota*; and *Detecting the Secrets of the Universe*.

Mentor Program

Mentor programs at the University give you the opportunity to explore career options, meet experienced professionals, and gain helpful information for making academic and career decisions. You are matched with a volunteer mentor who is a friend or alumnus of the University. After orientation and training, you and your mentor meet regularly at his or her place of work, or at various activities sponsored by the University.

Research Opportunities

Imagine participating in a research program with world-class experts, and getting paid to do it! As a student in the Undergraduate Research Opportunities Program (UROP), you'll conduct paid research or pursue special projects beyond your regular courses. A distinguished CLA or IT faculty member will guide you through the research process.

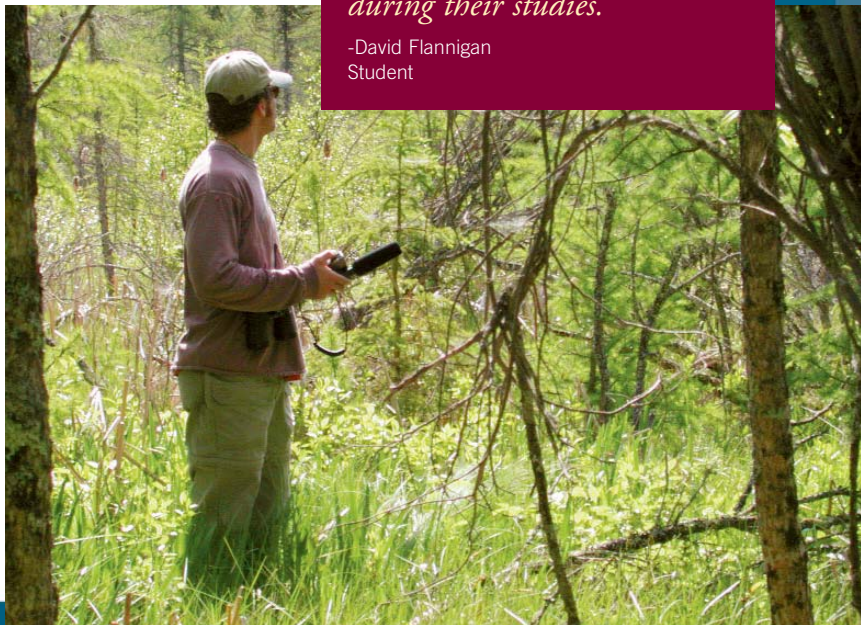
Campus Involvement

Even in the midst of an electric Big Ten atmosphere, the University of Minnesota has an intimate student community. It's easy to get involved here; we have over 600 student organizations where you can connect with other students who share your interests. These include:

- Academic Program for Excellence in Engineering and Science (APEXES)
- American Institute of Aeronautics and Astronautics
- Chemistry Department Chapter of WISE (Women in Science and Engineering)
- Geological Society at the University of Minnesota (UMGS)
- Institute of Technology House
- Students for the Exploration and Development of Space
- Women in Physics and Astronomy

“Doing undergraduate research for Professor Gladfelter at the U was absolutely critical for my graduate school career. I greatly appreciate the fact that the Department of Chemistry strongly encourages its undergrads to pursue this avenue during their studies.”

-David Flannigan
Student



Great Location

Consistently ranked among America's most livable communities, the Twin Cities provide an exciting and comfortable home to University of Minnesota students. Minneapolis and St. Paul are international centers for business, research, and technology.

MEET US IN PERSON!

Like what you see so far? Come meet us in person! There's no better way to learn about the University of Minnesota. As you tour our breathtaking Twin Cities campus and meet our friendly staff and students, you'll see for yourself why the U of M is the perfect place to launch your career in the physical sciences. We'd be happy to customize your visit to your interests. Schedule your visit today!

Online: <http://admissions.tc.umn.edu/visit>

By phone: 800-752-1000 or 612-625-0000

Curious about student life? Check out Gopher Blog at

<http://admissions.tc.umn.edu/blog>



Freshman Admission Welcome Center

200 Jones Hall
27 Pleasant Street S.E.

Transfer and International Admissions Welcome Center

240 Williamson Hall
231 Pillsbury Drive S.E.

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