

faculty at Pontificia Universidad Católica del Perú in Lima, Peru.

Among this year's other projects are a portable and cost-effective *E. Coli* detector, a dynamic brace to extend chronically contracted arm and wrist muscles in patients with traumatic brain injuries, a radiation exposure detection system for urban populations, and improvements to a childbirth simulator for training medical professionals.

"We're thinking about real people and how our project will affect them," says Nicholas Vavalle '10, from Binghamton, N.Y. He's on one of this year's design teams, called Lens Metrix, which has created a device for Bausch & Lomb to test the material properties of soft contact lenses.

Renea Faulknor '10, from New York City, and her teammates met with representatives of Becton, Dickinson and Co.—a New Jersey-based medical supply, device, and technology company—to compare ideas on an injection test device that nurses and EMTs could use to learn how to draw blood.

Faulknor and members of Injector Perfectioners designed a simulator that reproduces the challenges medical technicians and others often encounter.

"We're trying to model venous system complications such as collapsible veins and small or fragile veins," Faulknor says.

Students are treated in the same manner as faculty and staff with respect to intellectual property, and "the University is very supportive of their being inventors and holding patents," Seidman says.


Corine Farewell, the director of the University's Office of Technology Transfer, meets with the students to discuss intellectual property, confidentiality issues, and the disclosure process for commercially viable projects.

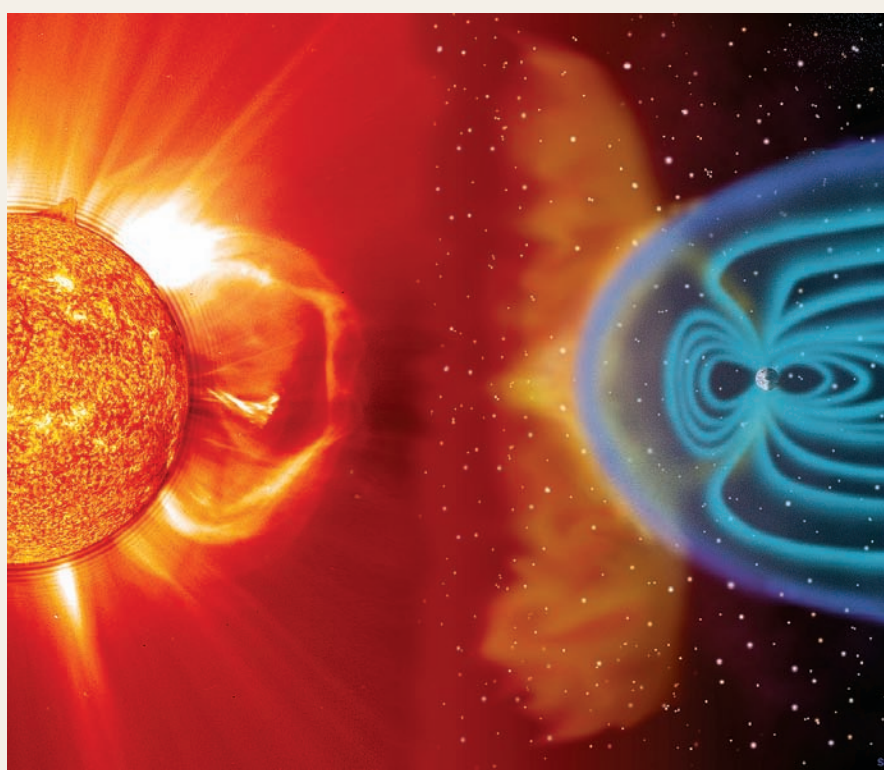
The course also covers what Lerner and Seidman call "realistic constraints" on the design process, including economic, social, political, ethical, regulatory, environmental, safety, and manufacturing issues.

Ten years in, Senior Design is a signature element of Rochester's biomedical engineering curriculum.

This year, Lerner and Seidman had so many interested customers they had to turn projects away.

"The community is realizing how valuable it is having a team of students working towards their goals," Lerner says.

"Our students are interested in solving problems with a global impact." 



#### EARTH SCIENCE

## A New Look at Ancient Earth

**SOLAR STORY:** About 3.5 billion years ago, Earth faced a bombardment of solar wind (shown here in a NASA illustration) that likely stripped much of the young planet's atmosphere. That's according to new research led by Rochester geophysicist John Tarduno that indicates the Earth's magnetosphere, the boundary where the planet's magnetic field shields the planet from the energetic particles released by the Sun, was once only half as strong as it is today. The work was published this spring in the journal *Science*.



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—Scott Hauser