

Tuesday, September 2, 2008

Volume 04, Issue 01

Jerrie Fiala, Editor: jerrie.fiala@wmich.edu

HP grant for tablet PCs to provide virtual materials science lab

Thanks to a 2008 Hewlett-Packard Company Technology for Teaching grant, students in the ME 2500 Materials Science classes – beginning Spring 2009 – will be able to test equations and theories in virtual laboratories. WMU is one of 39 colleges and universities in the US and Puerto Rico to receive the grant, which is designed to transform teaching and improve classroom learning with innovative uses of technology.

Dr. Pnina Ari-Gur, MAE professor and course coordinator for ME 2500, was awarded the \$77,000 grant to provide the labs via Hewlett-Packard Company Tablet PCs that will enhance the course-work for about 300 students each year. “I am very excited about this project,” she said. “When I saw the request for proposals, I knew this was exactly what we needed.”

The virtual lab includes a Hewlett-Packard Company Compaq Notebook/Tablet PC for the instructor and a cart of 20 for the students, a 24-inch flat panel monitor, keyboard, and optical travel drives, printer, cable and supplies, multimedia projector, digital camera, and all required software, licenses, batteries, and storage cases.

Ari-Gur’s grant, “Virtual Materials Science Laboratory Using Mobile Computer,” was selected from 370 applications. It includes \$20,000 in cash, and Hewlett-Packard Company technology valued at more than \$57,000. “Providing students with the materials science experience is expected to improve the success rate in the course,” she said.

According to Ari Gur, the students will benefit from a lab experience without the time, equipment, safety, and personnel costs of a real lab. A real materials science lab would require a major time commitment from second-year students who “already have very heavy course loads” because materials science processes can take several hours.

In addition, she explained that a failed process in a real lab can be a major safety hazard. “If the student makes a major error in the virtual lab, the PC will announce the disaster, so the student will immediately see the problem, but no one will get hurt,” she said. “And learning from mistakes is very effective.”

All the instructions and explanations are built into the virtual laboratory. The students run the tests and



Showcasing a new Hewlett-Packard Company virtual materials science lab that will be used in ME 2500 beginning Spring 2009 are (from left) **Roman Rabiej**, **Pnina Ari-Gur**, and **Peter Thannhauser**

submit their answers at the end of the lab for automatic grading. The interactive system enables the students to ask their questions directly because the instructors are available via e-mail during lab time, and the sketching capability of the tablet PCs enhances the students’ ability to ask questions.

“All our time is productive,” Ari-Gur said. “Having this virtual lab is beneficial from every point of view.”

Also participating in the project are **Dr. Muralidhar Ghantasala**, MAE associate professor, and **Dr. Roman Rabiej**, IDSA professor. Assisting them with the project is **Peter Thannhauser**, MAE lab supervisor, who has set up the system. **Barbara Wygant**, CEAS research and program officer, is coordinating the assessment / evaluation portion of the project.

Students required to take ME 2500 include students majoring in mechanical and aeronautical engineering and in engineering technology. It is an option for students majoring in industrial and entrepreneurial and electrical engineering.

Ari-Gur expects to expand the virtual lab to other courses that she and others teach. She is already making plans to write a further proposal to expand the project. For more information, contact her at pnina.ari-gur@wmich.edu

Send your thoughts or suggestions for future topics to the editor at jerrie.fiala@wmich.edu Thank you.