

Summer 2000

Welcome back!

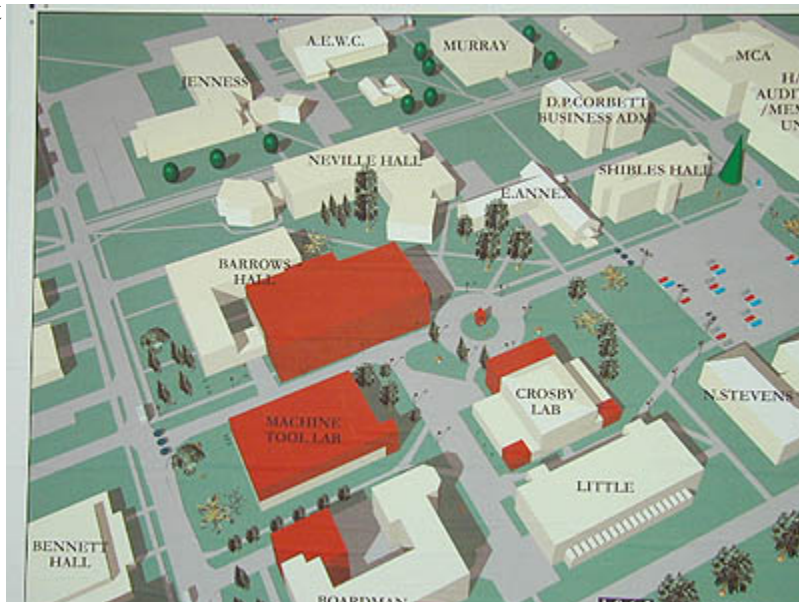


We just took our annual ECE hike to Gulf Hagas. Please come with us next year! Students, Alumni, future students, friends, family - everyone is welcome. Take a look at [some other photos from the hike](#). (Click and while it's downloading, come back and read the News...)

ECE Gulf Hagas hike

New Engineering and Science Building

The Dean's office has just begun reviewing architects' proposals for the new Engineering and Science Building. This three story addition to Barrows Hall will house elements of the Electrical and Computer Engineering Department, the Mechanical Engineering Department, and the Laboratory for Advanced Surface Science Technology. The building is being funded with bonds targeted



toward improving the research infrastructure of the State of Maine. The focus will be on materials research. For our part, it will prominently feature materials-related areas we have targeted as important research foci for us - sensors, microelectronics, and intelligent systems. The goal is to open the doors within three years. We will have much more to say about this as the new building progresses. Stay tuned. We'll have some pictures in the near future.

ECE Department to be evaluated by ABET

Every six years, the Accreditation Board for Engineering and Technology, Inc. evaluates engineering colleges in the United States who (re)apply for accreditation. We will be visited in October to renew our accreditation, and this summer, we prepared a [Self-Study Report](#) detailing just about everything you could hope to learn about us. Of particular interest is a [database](#) that maps very specific ECE course objectives to the criteria ABET uses to evaluate our program. Please take a look!

"Semi-new" Lecturers in Computer Engineering



Bruce Littlefield

This summer, our Department System Administrators, Bruce Littlefield and Andy Sheaff, were promoted to half-time lecturers of Computer Engineering. Last semester, they taught a new course in Linux System Administration. This year, we will see a repeat of that popular course, as well as an advanced System Administration course, support for a basic course in computer networking, and active participation in a proposed high school computer engineering course. (See below.) Bruce and Andy are very

interested in teaching what they consider to be practical, nuts and bolts networking - network design, maintenance, diagnosis of system problems, and the cause and effect of new network technology implementations. Often, attention to these issues fall into what one might consider the "electrical engineering" end of networking rather than the algorithmic, protocol-oriented "computer science" end. We think this material is perfect for Computer Engineering program.



Andy Sheaff

Computer Engineering Course for High Schools

This year we will be initiating work on a computer engineering course to be offered, initially, to high school teachers and eventually, to high school students. While we believe that high schools do a good job teaching math and science, we are concerned there aren't enough opportunities to teach the practical application of math and science to build systems. This project-oriented course will be designed around MIT's [Handyboard system](#) as implemented in a robotics toolkit very reminiscent of Lego's Mindstorm for young children. We are investigating the use of this Handyboard



system in our first year ECE course to teach the fundamentals of microprocessor architecture and assembly language programming.

A serious curriculum question ...

We are currently struggling with a curriculum question, and, in the true spirit of ABET's requirement to address the needs of our constituents, the faculty has decided to ask your advice. Whether you are an alumnus, current student, or future student, your opinion is valued. Here is the issue:

We are faced with the age-old dilemma of trying to fit new material into the curriculum while still allowing graduation in four years. Recently, we removed the requirement for ECE262, Solid State Electronic Devices, from the sophomore year, and, in order to provide more material in the microelectronics area, we are creating, this spring, a 400-level, in-depth, elective course, Semiconductor Devices and Models. As a result, we must introduce some introductory solid-state concepts in the junior level electronics course. The problem is that this electronics course is already jam-packed. Because we consider electronics to be a key area - especially with respect to the requirements of our senior level design project course sequence, the faculty is weighing the following alternatives:

1. Making a second electronics course, ECE343, a required course in lieu of the introductory power and machines course, ECE323
2. Allowing students to choose between the second electronics course and the introductory power and machines course
3. Remain with the current policy of requiring the introductory power and machines course

What are your thoughts? What would you favor? Please send your comments to musavi@eece.maine.edu

Network Engineering Course

This semester, we are offering a new course, [Intro to Network Engineering](#). The purpose of this course is to introduce modern data network technologies and implementations of server technologies, with some additional background on historical networking architectures. It will cover LAN and WAN technologies, mainly focusing on hardware implementations. Some theory on network optimization will also be introduced.

And finally ...

Scene: A public execution by guillotine -

Three condemned people are to be executed via the guillotine...

First condemned person steps up, a minister. Switch is pulled. Blade doesn't come down. Minister cries out: "God knows I am innocent!" He's pardoned.

Second condemned person is a revolutionary agitator. Switch is pulled. Blade doesn't come down. Guy cries out: "The revolution cannot be stopped!" He's pardoned.

Third condemned is an engineer. Same deal. He looks up, points up, says, "Hey, I think your problem is that binding cable ..."

Publications, proposals, etc.

INDUSTRY/SCHOOL VISITS: DATE INDUSTRY SCHOOL

Faculty/Description:

- Irons, F. 8/7/00 Quadic, Portland (visit Jeremy Ferris and Al Blais to review senior project)
- Beenfeldt, E. 8/22/00 Nat'l Semiconductor, (visit Andrew Geissler to Portland review senior project)
- D. Hummels, F. Irons 8/30/00 Fairchild Semiconductor, (Presented an all-day 2 session Portland seminar. The two 4-hour sessions entitled, "A/D and D/A Concepts" were a part of the short course series being offered by the ECE Department)
- D.E. Kotecki 7/21 National Semiconductor. Portland
- D.E. Kotecki 6/7, 6/20, 7/6 SRD, Orono 7/21, 8/15

GRANTS RECEIVED

Kotecki, D., Irons, F., Hummels D., Whitney, A. and Schoof, J., "Analog Microelectronics Training @ Fairchild Semiconductor," (DIC) half-day short courses in August and December, \$12,500, July 12.

PROPOSALS SUBMITTED

- Musavi, M. (70%), VanBeneden, R. (15%), Resson, H. (15%), "An Accurate DNA Base Caller," NSF, \$540,245, July 10.
- Vetelino, J. (17.5%), DeSisto, W. (17.5%), Lad, R. (17.5%), Frederick, B. (17.5%), Amar, F. (30%), "A Multidisciplinary Approach to the Science and Engineering of Oxide-Based Devices," NSF, \$2,699,225, July 19.
- Resson, H., "Integrated Computational Intelligence for Optimum Design of Fuzzy Logic Controllers," NSF, \$375,000, July 26.
- Musavi, M. (70%), Resson, H. (30%), "Automatic Extraction of Road and River Network Using Intelligent Systems," National Imaging and Mapping Agency, \$95,741, July 31.

- Patton, J. (12.5%), Bickford, T. (12.5%), Latour, L. (25%), Eason, R. (25%), Garthwait, A. (25%), "The Robotics in Informal Science Education Program (RISE)," pre-proposal to NSF, \$598,846, Aug. 2.

PUBLICATIONS

- "Characterization of a WO₃ Thin Film Chlorine Sensor," *Sensors & Actuators*, J.F. Vetelino, F. Bender, T. Misna, C. Kim, July 1.
- "The Sensitivity of Bulk Wave Modes in Quartz to Measurand Induced Mechanical and Electrical Property Changes," *Sensors & Actuators*, J.F. Vetelino, R.F. Schmitt, C. Chang, J.W. Allen, J. Parks, July 1.
- "Pure Shear Horizontal Surface Acoustic Waves in Potassium Niobate for Fluid Phase Sensing Applications," *Sensors & Actuators*, J.F. Vetelino, C. Jang, J.J. Caron, July 1.
- "A Semiconducting Metal Oxide Sensor Array for the Detection of NO_x and NH₃," J.F. Vetelino and B. Marquis, *Sensors & Actuators*, July 1.
- "Aggregation of Gold Particles on Tungsten Oxide Sensors," J.F. Vetelino, B. Frederick, J. Legore, *Sensors & Actuators*, July 1.
- "The Noise Power Ratio ? Theory and ADC Testing," F.H. Irons, K.J. Riley, D.H. Hummels and G.A. Friel, *IEEE Transactions on Instrumentation and Measurement*, Special Issue on Selected Papers IMTC'99, pp. 659-665, June 2000.

PROFESSIONAL ACTIVITY

- R. Eason has been collaborating in steganography research with Dr. Kawaguchi, a colleague at Kyushu Institute of Technology in Kitakyushu, Japan, May 29-July 7.
- M. Musavi review paper, "Chromosome Classification," for Journal of Laboratory Investigation, July 28.
- M. Musavi reviewed paper for Journal of Laboratory Investigation, July 28,2000.

PRESENTATIONS

- J.F. Vetelino, "Characterization of a WO₃ Thin Film Chlorine Sensor," International Meeting on Chemical Sensors, Basel, Switzerland, July 2.
- J.F. Vetelino, "The Sensitivity of Bulk Wave Modes in Quartz to Measurand Induced Mechanical and Electrical Property Changes," International Meeting on Chemical Sensors, Basel, Switzerland, July 3.
- J.F. Vetelino, "Pure Shear Horizontal Surface Acoustic Waves in Potassium Niobate for Fluid Phase Sensing Applications," International Meeting on Chemical Sensors, Basel, Switzerland, July 4.
- J.F. Vetelino, "A Semiconducting Metal Oxide Sensor Array for the Detection of NO_x and NH₃," International Meeting on Chemical Sensors, Basel, Switzerland, July 5.
- J.F. Vetelino, "Aggregation of Gold Particles on Tungsten Oxide Sensors," International Meeting on Chemical Sensors, Basel, Switzerland, July 5.
- J.F. Vetelino, "Microsensor Research at UMaine," Univ of Brescia, National Institute of Physics and Materials, Brescia, Italy, July 6.
- J.F. Vetelino, "Microsensor Research at UMaine," Univ. of L'Aquila, Dept. of Chemistry, Chemical Engineering and Materials, L'Aquila, Italy, July 11.