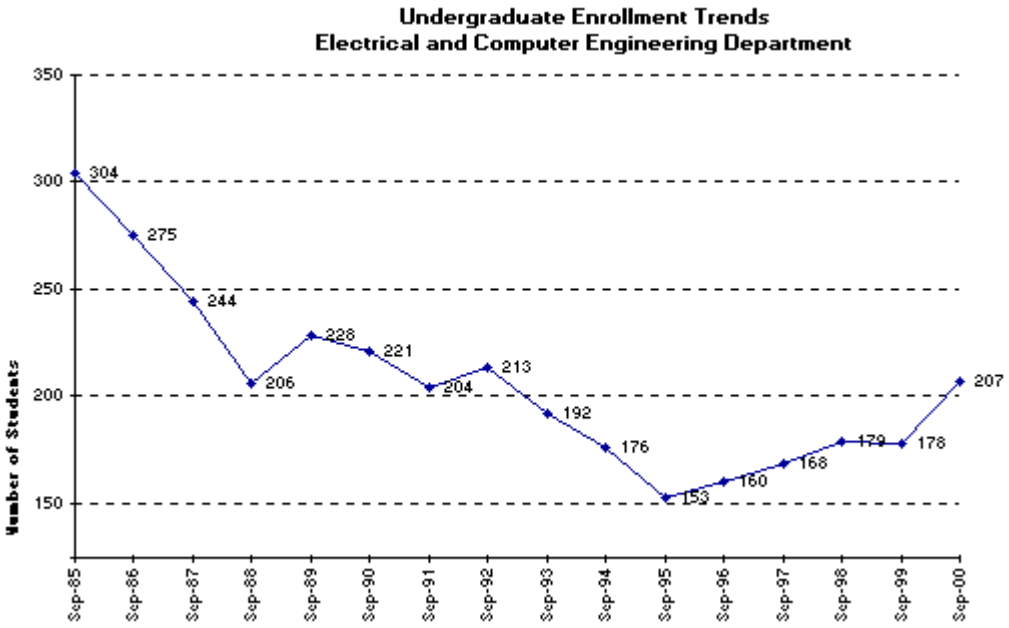
September 2000

On Jobs, Recruiting, and Enrollment ...

At this time of year, we are visited by many companies seeking ECE graduates. Unfortunately, even though our total Department enrollment is increasing (see below), there aren't enough students to satisfy the demand. The opportunities for ECE students are greater than they've ever been before.



Why do these companies look for UMaine grads? Many of our alumni/ae come back as recruiters. Once out in the engineering world, they talk with other engineers educated at other institutions. They recognize that UMaine engineers are, without doubt, some of their most **knowledgeable, reliable, hardworking, and loyal** employees. If the company is Maine-based, it realizes the difficulty of attracting and keeping people "from away".

In order to keep our program strong, many of these companies invest in the Department. The Microelectronics Scholarship Consortium is a good example. See the letter from Steve Swan, National Semiconductor.

I stress to companies that, instead of competing to hire our students, they should **join with us to increase enrollment**. The combination of **scholarship/co-op is nearly unbeatable** for attracting good people, and many of our students return from their co-op assignments with offers in-hand. It's

particularly frustrating for companies who don't even get a chance to compete for these committed students.

How can we increase the number of UMaine graduates? Last year, I was given some advice by a sage young woman who happens to be one of our undergraduate students, Hilary Flinkstrom. She said we must learn how to **make students feel welcome at UMaine BEFORE they get here**. It was only after she began her studies here that she realized how special UMaine is. It is important for us to reach out to potential students in the same personal way that we reach out to our current students..

I would like to enlist help from our alumni to achieve that. We have a community that is unique, and we support each other. I would like to propose that alumni (particularly alumni from companies attempting to hire our students) help us **phone potential students and describe what UMaine has meant to them** and how we are different from other schools. Your personal story will do more to convey our message than all the promotional materials we could generate. If you are interested in participating in this program, **please call me at 207/581-2223 or email me** at : musavi@eece.maine.edu. I'm excited by the prospect of linking two of our most important constituencies - our future students and our former students. Thank you very much!

New Student Dinner ....

This year, we held our first New Student Dinner. First year and new transfer students were invited to attend and meet the faculty and staff. One of the more frustrating characteristics of our program is that many of our faculties don't get a chance to meet students until they are well along in the program. We are changing that situation by introducing them early. At this dinner, we broke some ice and I uncovered some little known facts about our faculty that they probably wouldn't have told you about themselves. ;-) All students are encouraged to drop in on their advisors (or any other ECE faculty) to chat about concerns or interests. Please take advantage of this opportunity to learn more about the engineering profession.

Industrial Advisory Committee reports ....

Our industrial advisory committee (also known as the "Visiting Committee") visited us recently and issued a report on the health of the Department. The Visiting Committee is a key component of the feedback we receive in order to maintain our program's quality. The Visiting Committee literally "visits" with student groups, the faculty, the Dean, and the upper administration.

I would like to mention one small part of their report - **"Students generally describe UMaine engineering as the best-kept secret in Maine. They emphasize value and quality as reasons for choosing Maine.** These are excellent messages, which need to be communicated." We would very much like your help in communicating that message. Please tell your neighbors, friends or anyone else contemplating an engineering career. Thanks.

Company News ...

Quadic Systems was bought by Tundra Semiconductor, headquartered out of Ontario. We look forward to working with Tundra to expand opportunities in microelectronics, and we appreciate their offer to fly our faculty to Tundra for a visit.

National Semiconductor - We much appreciate Steve Swan's kind remarks sent to our Dean after the Visiting Committee meeting.

Bangor Hydroelectric, Maine Public Service, and Central Maine Power- As many of you are aware, the electric utility industry has been in a state of dramatic change. BHE has been purchased by Emera Inc. formerly Nova Scotia Power Holdings Inc. MPS sold all its generation assets to WPS-PDI, a wholly-owned subsidiary of WPS Resources Corporation, headquartered in Green Bay, Wisconsin. And CMP was sold to Energy East Corporation September 1, 2000.

Hewlett Packard interviewed on campus for the first time in many years - primarily due to the good experience HP has had with UMaine grads. Tim Michalka, from HP's VLSI Technology Center in Fort Collins visited us this year and interviewed students.

Texas Instruments - Pat Bohan, Test Engineer Manager from TI's Advanced Analog Products, Semiconductor Group, visited us this month, and TI has agreed to become a member of the Microelectronics Scholarship Consortium. We look forward to continuing our excellent relations with TI.

International Paper bought Champion Paper.

If you have company news affecting ECE Alumni/AE, please send it along to me. Thanks.

Faculty Focus - Professor Don Hummels

(We're beginning a series of faculty update profiles. Many of you are aware we previously provided this information in an annual newsletter format. We are transitioning to this monthly format, so we can be more current with the information. The first update focusses on Dr. Don Hummels. Last year, Don was promoted to full professor, and as shown below, is quite active.)

Don Hummels has continued his **work with high-speed data converters** in the Communications Devices and Applications (CDA) laboratory. Under the DARPA Digital Receiver program, Professors Hummels and Irons were responsible for the development and implementation of techniques to adaptively compensate for nonlinearities introduced into all-digital receivers by these converters. This program concluded in September 2000, and the current research emphasis is in support of test and calibration if commercial A/D and D/A converters. For several years now, Texas Instruments Incorporated has provided gifts to the laboratory to support work related to test and evaluation of data converters. The gifts fund scholarships to students, and provide support for students to work within the CDA laboratory. Students who gain experience testing data converters in the CDA laboratory have been offered co-op positions with Texas Instruments at Dallas, Texas. Two students have completed coop experiences at TI/Dallas, with two others scheduled to begin in spring/summer 2001. Currently five undergraduate students are receiving support through the TI cooperation.

Professor Hummels is also continuing his interaction with the Naval Undersea Warfare Center (NUWC) at Newport Rhode Island. Recent work has concentrated on the **development of an Acoustic Telemetry Modem for underwater communication**. The modem implements a multiple-input adaptively equalizer to cope with severe fading and multipath which is present for an undersea acoustic link. The equalizer combines signals from several sensors which are physically separated in order to improve the performance of the link. Algorithms are being implemented in real time using several Analog Devices Sharc signal processors which communicate with each other. Tests of the operational system should begin in the Spring 2001 semester.

Professor Hummels teaches the undergraduate Communications and Digital Signal Processing (DSP) courses, as well as Graduate level courses dealing with Random Processes, Communication, and Optimal Signal Processing. The undergraduate DSP course (ECE-486) is currently undergoing a major revision. ECE-486 is now a required course for all Electrical Engineering students. The department is establishing a significant DSP capability in its Junior Electronics Laboratory which will include a collection of ten ADI Sharc DSP development boards with complete software development tools. Using these systems, students will be asked to implement and demonstrate (in real-time) various DSP algorithms. The development boards include analog interfaces so that stereo CD-quality audio signals can be manipulated. The new laboratory will be used in the Spring 2001 semester.

A serious curriculum question, revisited ...

Last month, we asked you to consider an important curriculum question. I was gratified to receive about twenty replies to the question. Your advice certainly helped us deliberate the issue. Most of you felt students should be given a choice. The faculty listened and decided to allow an additional technical elective. Hence, we have made both ECE323, Power Systems I, and Electronics II technical electives. Please note that these decisions are accompanied by much debate. We are still considering whether to require a lab with this elective.

And finally ...

Are you qualified to be a "professional"?

Remember there is no cheating allowed while taking this test. Enjoy and start..... here!

DIRECTIONS: The following short quiz consists of 4 questions and tells whether you are qualified to be a "professional." Scroll down for each answer. The questions are not difficult.

1. How do you put a giraffe into a refrigerator?

The correct answer is: Open the refrigerator, put in the giraffe and close the door. This question tests whether you tend to do simple things in an overly complicated way.

2. How do you put an elephant into a refrigerator?

Wrong Answer: Open the refrigerator, put in the elephant and close the refrigerator.

Correct Answer: Open the refrigerator, take out the giraffe, put in the elephant and close the door. This tests your ability to think through the repercussions of your actions.

3. The Lion King is hosting an animal conference. All the animals attend except one. Which animal does not attend?

Correct Answer: The Elephant. The Elephant is in the refrigerator. This tests your memory. OK, even if you did not answer the first three questions correctly, you still have one more chance to show your ability.

4. There is a river you must cross but it is inhabited by crocodiles. How do you manage it?

Correct Answer: You swim across. All the crocodiles are attending the Animal Meeting. This tests whether you learn quickly from your mistakes.

According to Andersen Consulting Worldwide, around 90% of the professionals they tested got all questions wrong. But many preschoolers got several correct answers.

Anderson Consulting says this conclusively disproves the theory that most professionals have the brains of a four year old.

Publications, proposals, etc.

INDUSTRY/SCHOOL VISITS: DATE, INDUSTRY ;SCHOOL

Patton, J.;9/26/00;Tundra (formerly Quadic);S. Portland

PROPOSALS SUBMITTED

Hummels, D., "Digital Acoustic Telemetry Upgrade," Naval Undersea Warfare.

PUBLICATIONS

"Cross-talk Filtering in Four Dye Fluorescence-based DNA Sequencing," C. Domnisoru, X. Zhan, and M. Musavi, *Electrophoresis*, pp. 2983-2989, Vol. 21, No. 14, August 2000.

PROFESSIONAL ACTIVITY

D. Kotecki visited with Chuck Musante and Aixtron rep at Univ of Mass at Amherst, Sept. 25.

J. Patton attended Orono Town Council breakfast, Sept. 26.

D. Kotecki reviewed paper for Applications in High Aspect Ratio Structures," J. Vacuum Science and Technology, Sept. 24.

C. Domnisoru, J. Patton, M. Musavi and H. Ressom attended Agent Institute Workshop, Wells Conference, Sept. 27.

J. Patton attended MMSTEC NSF-CETP collaborative grant project meeting, Shibles Hall, Sept. 27