

March 2000

ECE Senior named "Maine Student Employee of the Year"

We are very proud that Jamie Guevara, a senior in our Department has won, not only the UM Student Employee of the Year award, but also the Maine State Student Employee of the Year award.



Jamie with visiting Girl Scouts

Jamie has been employed by the ECE Department as a Teacher's Aide for three years. Her duties have been many, but her biggest contributions have been made as a "peer teacher" in ECE 101, the ECE Department's fall semester course for first-year students. For three years, she has had primary responsibility for the portion of the course dealing with strategies for being a successful student and an overview of different kinds of engineering. The course has two major goals; to **help students be successful in**

making the transition from high school to college and to introduce aspects of electrical and computer engineering. To achieve these goals the course has two distinctive parts, one concentrates on **developing skills for working in teams**, making **oral presentations**, being a successful student, **ethics**, and various types of engineering are also discussed. This portion of the course is guided by peer Teaching Aides. We have found that carefully selected peer TAs make connections with the students that regular faculty cannot. Jamie was initially chosen for this role because the Department felt she had the characteristics to be successful. She proved to be an outstanding example of what a peer teaching aide can accomplish.

Jamie has always been willing to help the Department whether as a student employee or as a member of the ECE "family". As one example of tremendous initiative in the latter category, she conceived of the idea and then implemented, a "Weekend at UMaine" for prospective female students during the spring semester. This involved extending written invitations, making follow-up calls, arranging for housing, and leading a tour of campus and Department facilities. She did all this on a volunteer basis, because she felt that women were underrepresented in the ECE Department and she wanted prospective women students to know about the great opportunities that were available to them at UMaine and in ECE. She has served as a sort of "Big Sister" to ECE women students in their first and second years helping them to get a good start. She also helps during University Open House Tours by giving presentations to groups of prospective students about student life here at UMaine and the ECE Department in particular.

Jamie, we're very grateful to you.

Record Turnout for "Effective Teaching" Workshop

During Spring Break, nine of our faculty attended a workshop put on by [Rich Felder](#) and Rebecca Brent on "Effective Teaching". The workshop was filled to capacity (50 people), primarily with engineering faculty. The instructors noted they had not seen and could not imagine seeing so many faculty taking time from their spring break for this important seminar. They were very impressed.



Some of the concepts that I thought might be of use to students include:

- [Tips on Test Taking](#) Good practices in preparing for tests and taking them
- [An Engineering Student Survival Guide](#) A discussion of resources available to students who are not getting what they need from the instructor and text in a class.
- [Memo to students who are disappointed with their last test grade](#) Suggestions for improving test grades.
- [Tips on Talks](#) Good practices in preparing and delivering formal oral presentations

Intelligent Systems student receives kudos

We got this note from Steve Swann at National Semiconductor about the fine work of one of our co-op students, Pat Ferland. Steve didn't mind if I shared it with you, so I thought it would be good to show an example of what can happen in our co-op program..



I wanted to send you a brief note to let you know how pleased we are with the results of the project that Patrick Ferland worked on during his 6 month assignment here. By working with Engineers from our Process & CIM group, Patrick built a fuzzy-logic feedback system that has allowed us to put an intelligent control system on-line in production. By the end of the term, the team filed a patent disclosure with our corporate legal group based on the application of this technology.

By using this control system in addition to our existing process tools we were able to improve the Cpk (a process control metric) from ~1.7 to ~2.4 at one of our critical process steps (a value of 1.0 indicates a process that is only capable of running within

the upper & lower specification targets). This translates directly to an increase in yields and revenue per wafer for the site. Moreover, it served as an example for the rest of the organization as to "what is possible" using Intelligent systems.

I look forward to the project that Shavat has started in our photo group and to further collaboration in the future.

Please pass along our thanks and tell your group to keep up the good work!

*Steve Swan
Process Engineering Manager
National Semiconductor, South Portland Maine*

Fuzzy Logic Grad Course to be offered this summer via Distance Ed.

Dr. Bruce Segee will offer a [grad course on Fuzzy Logic](#) this summer. Bruce tells me he will make this course available over the web to distance ed students if there is interest. If you're interested in taking this course off-campus, please email segee@eece.maine.edu.

ECE Registration FAQ arrives in time for Pre-Registration

Pre-registration for next semester begins soon, and we've added a new web page to our arsenal of information. Please note the [ECE Registration Frequently Asked Questions \(FAQ\)](#) is now available. If you have contributions, send me an email. Thanks.



Does the future need us?

Bill Joy, Chief Scientist for Sun Microsystems, recently wrote a very provocative [article](#) for Wired magazine. In the article, he makes the case that if [Moore's Law](#) holds for the next thirty years, computers will acquire the intelligence of humans, able to reproduce themselves and, essentially, able to render humans unnecessary. He takes a serious look at robotics, genetic engineering, and nanotechnology. Joy writes, "because of the recent rapid and radical progress in molecular electronics - where individual atoms and molecules replace lithographically drawn transistors - and related nanoscale technologies, we should be able to meet or exceed the Moore's law rate of progress for another 30 years. By 2030, we are likely to be able to build machines, in quantity, a million times as powerful as the personal computers of today - sufficient to implement the dreams of Kurzweil and Moravec."

Joy's calls for ethical restraint on computer research along the lines of restraint on human cloning research. He writes, "given the incredible power of these new technologies, shouldn't we be asking how we can best coexist with them? And if our own extinction is a likely, or even possible, outcome of our technological development, shouldn't we proceed with great caution?"

At a recent [National Electrical Engineering Department Heads Association meeting](#), Dr. Larry Smarr, Director of the National Center for Supercomputing Applications referenced Joy's article in his presentation on [The Emerging Concept of a National Scale Information Power Grid](#) and presented a [graphic](#) showing computers to currently have the intelligence of a spider. In thirty years, that intelligence will increase to the level of a human being.

Dr. Eugene Wong, Assistant Director (Engineering), at the National Science Foundation, next gave a presentation on [Strategic Directions in Engineering Research](#) indicating that the following research areas will receive highest priority in the near future:

- Micro/Nano systems - Moore's Law - unlimited scalability
- Information technology - confluence of computing and communications
- Biotechnology - molecular secrets of life

This irony of the order of these presentations was not lost on the audience. We are indeed entering an unprecedented era in humankind. I hope we have the wisdom to manage it.

And finally ...

Reaching the end of a job interview, the Human Resources Person asked the young Engineer fresh out of UM ECE, "And what starting salary were you looking for?"

The Engineer said, "In the neighborhood of \$75,000 a year, depending on the benefit's package."

The HR Person said, "Well, what would you say to a package of 5-weeks vacation, 14 paid holidays, full medical and dental, company matching retirement fund to 50% of salary, and a company car leased every 2 years - say, a red Corvette?"

The Engineer sat up straight and said, "Wow!!! Are you kidding?"

And the HR Person said, "Of course, ...but you started it."

Publications, proposals, etc.

GRANTS RECEIVED

D.E. Kotecki, "UMaine - IBM Joint Studies Agreement on High-K Dielectrics. DIC Project Number S-1953-01", \$10,000, March 7.

Hummels, "Underwater Range Data Communications," US Dept. Defense/Navy, \$24,965, Feb. 23.

PROPOSALS SUBMITTED

D.E. Kotecki submitted a proposal entitled, "The Use of Computer Generated Visualization to Enhance the Graduate-Level Curriculum in Electrical Engineering," for consideration for the ACAC/CTE Teaching and Technology Fellowship, \$9,000, March 30, 2000.

PUBLICATIONS

K.L. Saenger, J.H. Comfort, A. Grill, and D.E. Kotecki, U.S. Patent 6,027,966, "Isolated sidewall capacitor," February 22, 2000.

J.P. Gambino, M.A. Jaso, and D.E. Kotecki, U.S. Patent 6,025,226, "Method of forming a capacitor and a capacitor formed using the method," February 15, 2000.

PROFESSIONAL ACTIVITY

Kotecki submitted a letter of intent to the Maine Technical Institute entitled, "Silicon-based micro-heaters for solid-state gas sensors," February 11.

Irons reviewed a manuscript for the IEEE Trans.on Instrumentation and Measurement, Feb. 28.

Patton attended a seminar by Dr. Bernice Sandler on "Female Faculty Evaluations", Soderberg Center, March 8.

Patton, Resson, Kotecki attended seminars on Effective Foundation Grant Writing, Soderberg Center, Feb 29, March 2,7,9.

Musavi, Resson and Segee met and collaborated with Jan Semba from Computer Assoc. International, March 9.

D.E. Kotecki reviewed a paper for the IEEE Electron Device Letters, on March 15.

Vetelino participated on NSF Review Panel on XYZ on a Chip, Washington, DC, March 21-25.

Patton attended National Electrical Engineering Dept. Heads' Meeting, New Orleans, LA, March 17-21.

PRESENTATIONS

Kotecki and Patton gave a presentation of the Department at the Fairchild Semiconductor Scholarship meeting -- 13 students and their parents attended, Portland, March 4.

SERVICE

Eason hosted Holbrook Middle School (approx. 40-50 students) for a tour of the robotics Lab, March 3.

Beenfeldt, Field, Kotecki, Eason, Hanselman, Patton, Resson, Segee and Whitney, attended Teaching Effectiveness Workshop held by Richard Felder and Rebecca Brent, Soderberg Center, March 14-15.

Irons is representing the College of Engineering on the Academic Affairs Sub-committee to select the next two class books.

Patton and Chet Rock visited with Paul E. Mayotte Director, Legislative Information

Services, at the State House in Augusta on March 24. Mayotte is looking for support in designing a computer control room for the Legislative House network.